

POOR LEGIBILITY

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PRELIMINARY ASSESSMENT

SUBMITTED TO: Rachel Loftin, Site Assessment Manager,
EPA Region IX

PREPARED BY: Sheila Mackenzie, Environmental Health Specialist,
Hawaii State Office of Hazard Evaluation and
Emergency Response

THROUGH: Elizabeth Galvez, Acting Team Coordinator, HEER

DATE: June 1994

FACILITY: Flynn-Learner, 120 Sand Island Access Road,
Honolulu, Hawaii

EPA ID#: HID984468363

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1.0 Introduction

The U.S. Environmental Protection Agency (EPA), Region IX, under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA) has tasked the State of Hawaii Department of Health (DOH) to conduct a Preliminary Assessment (PA) at the Flynn-Learner site in Honolulu, Hawaii.

The purpose of the PA is to review existing information on the site and its environs to assess the threat(s), if any, posed to public health, welfare, or the environment and to determine if further investigation under CERCLA/SARA is warranted. The scope of the PA includes the review of information available from federal, state, and local agencies, and performance of an on-site reconnaissance visit.

Using these sources of information, the site is then evaluated using EPA's Hazard Ranking System (HRS) criteria to assess the relative threat associated with actual or potential releases of hazardous substances at the site. The HRS has been adopted by the EPA to help set priorities for further evaluation and eventual remedial action at hazardous waste sites. The HRS is the primary method of determining a site's eligibility for placement on EPA's National Priorities List (NPL). The NPL

identifies sites at which EPA may conduct remedial response actions. This report summarizes the findings of these preliminary investigative activities.

The Flynn-Learner facility was identified as a potential hazardous waste site and entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) on May 4, 1992 (HID984468363), based on aerial photographs taken by EPA in 1985 showing heavy staining and information on the past uses of the site indicating a potential threat to public health and the environment.

1.1 Apparent Problem

The apparent problems for this site appear to be:

- * Known contaminated groundwater
- * Known contaminated surface soils

On June 26, 1991, the Solid and Hazardous Waste Branch of the DOH was informed about the facility's immediate closure plan and that all scrap metals from the facility were being transported to the Hawaii Metal Recycling Company located at Campbell Industrial Park. Further, the company was going to conduct an Environmental Assessment for the site as part of the facility closure plan. It is indicate on an Uniform Hazardous Waste Manifest form that on June 1, 1992, 18,000 pounds of PCB contaminated (up to 160 ppm) soil was shipped out of Hawaii (reference 1).

Environmental investigations conducted by environmental

consultants for former tenant, Flynn-Learner, and a site visit by DOH personnel on March 9, 1994, indicate that the entire 132,000 ft² is littered with scrap metal debris (reference 2). At the south corner of the site are open excavation pits, where hydraulic lifts used to be located, with a layer of light colored oil on the surface of the ground water. Soil samples collected by the former tenant's environmental consultant indicate the soil to be contaminated with lead, cadmium, PCB's, and petroleum products. Groundwater samples collected indicate lead contamination (reference 3).

2.0 Site Description

2.1 Location

The site is located on the island of Oahu, to the west of Honolulu, on a small peninsula of reclaimed land, on the northwest corner of Sand Island Access Road and Pahounui Drive (Figure 1, Area Location Map, Figure 2, Site Location Map). The site is approximately 500 feet southeast of Keehi Lagoon and 2,500 feet east of Keehi Lagoon Beach Park. The geographic coordinates of the site are 21°19'37.294" latitude and 157°53'36.310" longitude.

The climate in the region consists of abundant sunshine, warm and relatively constant temperatures, with average temperatures in Honolulu varying daily between 16.7°C and 26.7°C in winter months and 23.9°C and 31.7°C in the summer (reference 4). Rainfall in

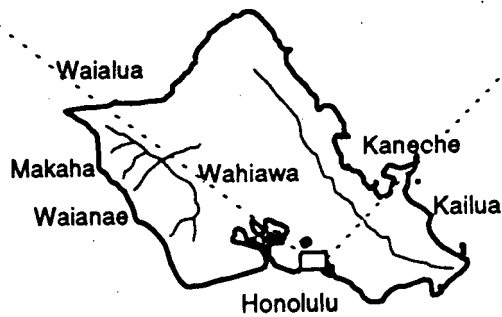
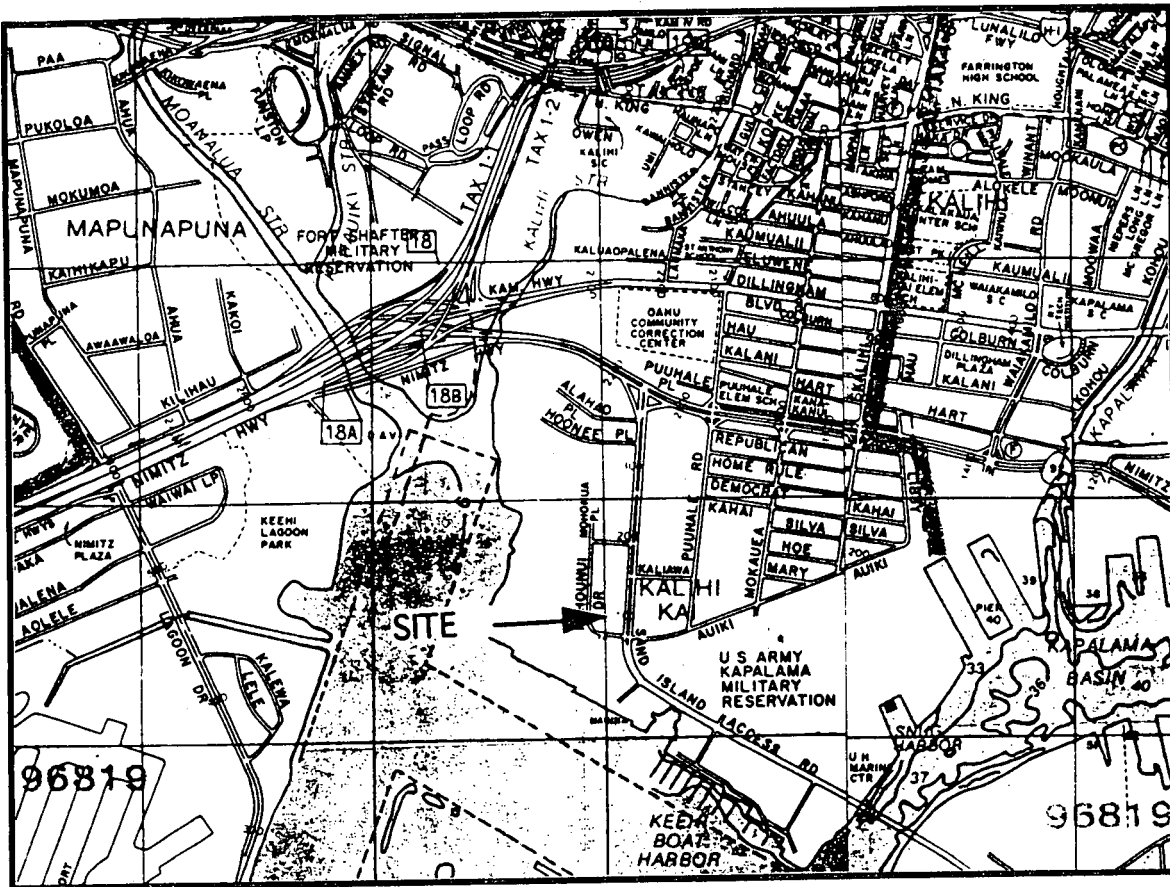
the area averages approximately 20 inches per year occurring primarily during the winter months and the 2-year, 24 hour rainfall is approximately 4 inches (reference 5). Northeasterly trades prevail in the Honolulu area, usually blowing from 10-15 miles per hour (reference 4).

2.2 Site Layout (Figure 2, Site Layout Map)

The Flynn-Learner site is a flat 330 by 400 foot property that currently lies unused. The site contains two truck trailers, two mobile homes, and two vacant structures - a single-story 30 by 45 foot office building and a 40 by 135 foot shed. The site consists of fairly level and barren soil, a silty sand mixed with metal, glass and plastic debris. At the southwest corner of the property are excavation pits with standing ground water at about 7 feet below ground surface (bgs). The site is enclosed by a six foot chain link fence (reference 2). Former structures located at the site consist of an incinerator, metal shear equipment, a battery casing storage sump, and an engine block sump.

Commercial warehouses and light industrial businesses are the major land uses in the area. It is bounded on the north by Kilgo's company which is a large outlet for building/marine/hardware supplies. West of the facility is Pahounui Drive where the Ameron Cement facility is located and beyond that is Keehi Lagoon. Various retail industrial businesses are located to the east of the site across Sand Island

FIGURE 1



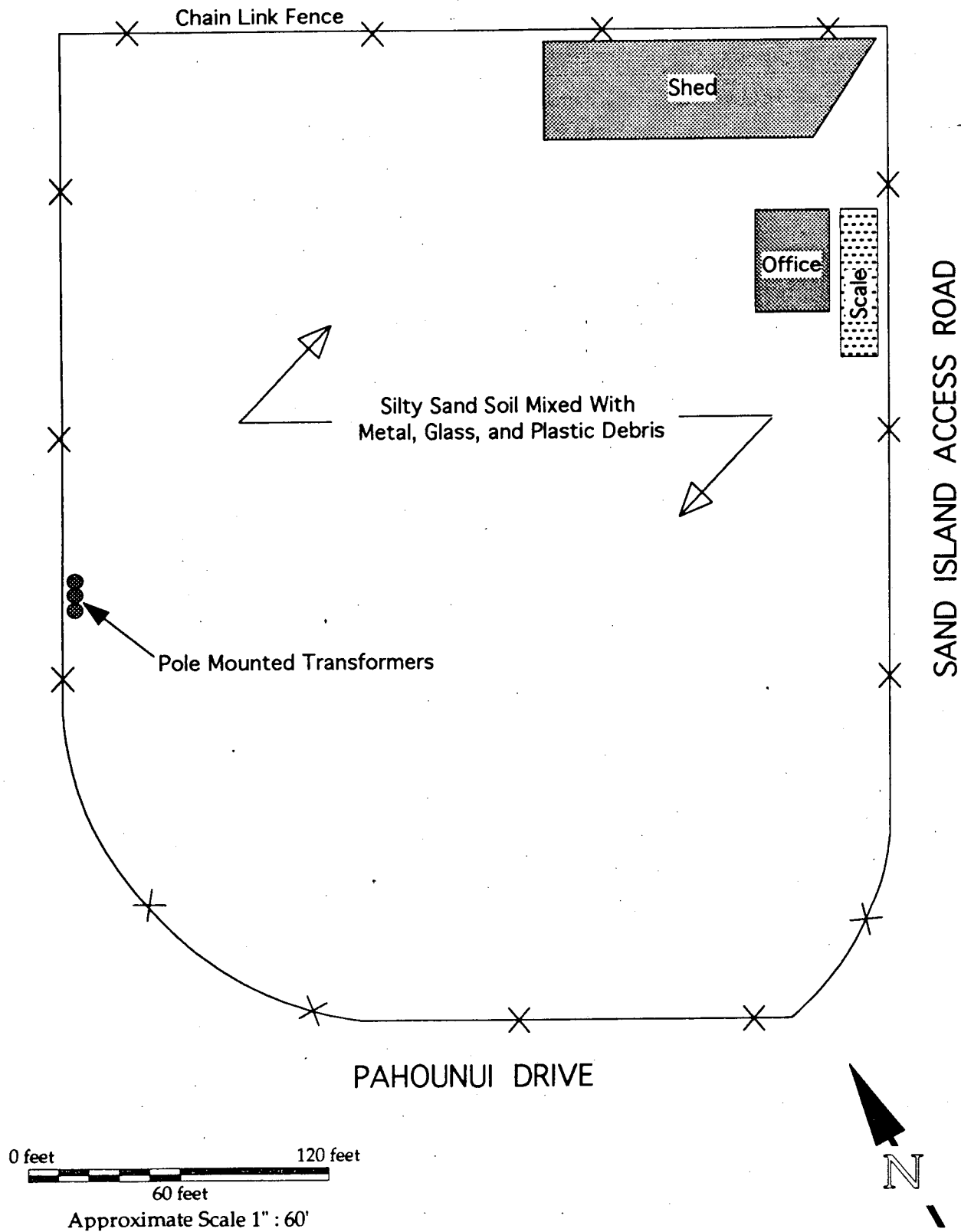
PROJECT SITE

LEDGEND

Scale 1:24,000



FIGURE 2



Access Road. To the south is the Kapalama Military Reserve (reference 2).

2.3 Operational History

In 1951, the Samuel M. Damon Trust Estate signed a 40-year lease with Flynn-Learner. Historically, Flynn-Learner operated a permitted metal recycling facility on the site from 1951 to 1991. The site was used as a scrap metal recycling which processed discarded automobiles, "white goods" (i.e., household appliances, washing machines, refrigerators, etc.), and other items containing scrap metal into ferrous and non-ferrous metal products. The operations involved stripping apart the engine block, axle, drive shaft, radiator, batteries and tires from the automobiles. In addition, rejected transformers, capacitors, and underground storage tanks were also accepted. The lease on the site expired in 1991 and the lessee, Flynn-Learner, currently wishes to return the site to the property owner, Damon Trust Estate. However, the transfer of the land is being held up as the issue of contamination has not been settled.

2.4 Regulatory Involvement

2.4.1 U.S. Environmental Protection Agency

The Flynn-Learner property is listed in Region IX's RCRA data base, dated February 9, 1994. as a small quantity generator (reference 18).

2.4.2 State of Hawaii Department of Health

DOH records indicate Flynn-Learner was permitted to operate a

metal reclamation facility under the Solid Waste Management Permit of the Solid Waste Office, Hawaii State Department of Health. The inspection report of June 25, 1991, prepared by the Solid and Hazardous Waste Branch highlighted the Department's concern about observed oil contamination near the baler and shearing area. The inspection by the Office of Solid Waste found the facility to be contaminated with used motor oil and other automobile fluids (reference 6).

3.0 Hazard Ranking System Factors

3.1 Sources of Contamination

Potential sources at the site due to past uses and observations are (reference 2):

- Unknown quantities of scrap metal received at the facility while in use.
- Solvents and paints stored at the auto repair shop and painting booth.
- Lead batteries on the grounds of the facility.
- PCB from transformer oil spills.

Actual contamination at the site based upon soil and water samples collected at the site for the environmental assessment completed consists of lead, cadmium, PCB's, and petroleum products. In 1992 PCB contaminated soil was removed and shipped to the mainland (reference 7), however the most recent environmental investigation indicates that there is still PCB contaminated soil to a depth of five feet at the site (reference

9).

3.2 Groundwater Pathway

The groundwater pathway is not of much concern as drinking water wells are located within a two to three mile radius upgradient of the facility.

3.2.1 Hydrogeologic Setting

The Honolulu area lies on a coastal plain surrounded to the west and east by the Waianae Range and Koolau Range, respectively, the Schofield plateau to the north, and the Pacific Ocean to the south. The Waianae and Koolau Ranges are two large shield volcanoes. The Schofield plateau was built by lava flows derived from the Koolau Range. The sea level repeatedly rose and fell, and during a stand 8 meters above present level, a broad coral reef was built along the south side of Oahu, forming the present Honolulu and Ewa plains. The coastal deposits are known locally as the caprock and includes terrestrial alluvium, marine sediments, calcareous reef deposits, pyroclastic rocks, and weathered basalt. The area is extensively drained by streams originating in the mountain ranges and flowing to the Pacific Ocean. Rainfall averages around 20 inches per year in the vicinity of the site (reference 8).

The majority of the site is underlain by a sequence of sandy gravel, silty gravel, clayey gravel, and some clay. The Sand Island Access Road traverses primarily through soil classified as

fill material. Fill material consists mainly of silty sand and coral gravel dredged from Honolulu Harbor. It is highly unconsolidated with characteristics of high porosity and permeability (reference 10).

The subsurface conditions are described as the first layer consisting of dark brown silty sand with gravel fill extending to 6 to 8 feet below ground surface, occupying the entire vadose zone and extending into the upper aquifer. It is interspersed with layers of boulders, coralline fill, and incinerator ash (reference 9).

First encountered groundwater is referred to as the caprock aquifer which is tidally influenced and occurs at depths ranging from 3.5 to 6.5 feet below ground surface (bgs), depending on location on site. This upper aquifer is classified as being a non-drinking water source with no ecological importance. It has moderate salinity (1,000-5,000 mg/L chlorides), is considered to be a replaceable water source, and is considered to be highly vulnerable to contamination. The underlying basal aquifer is 600-800 feet bgs and is currently being used as an irreplaceable drinking water source. However, due to its depth and the existence of confining aquitards, it is considered to have a low vulnerability to surface contamination (reference 11).

3.2.2 Groundwater Targets

The closest drinking water wells are located within a 2 to 3 mile radius of the site. The wells within a 4 mile radius serve an estimated population of 321,450 (references 12 and 13). The upper caprock aquifer is reported to be contaminated by direct infiltration and migration of surface discharges. The environmental assessment report by Cotton and Frazier Environmental Consultants for Flynn-Learner, indicated the presence of free petroleum product (reference 3) and was confirmed during the site visit by DOH personnel (reference 2). Vertical contaminant migration from the caprock aquifer to the basal aquifer is unlikely due the presence of the fairly impermeable caprock and the distance to the basal aquifer.

3.2.3 Groundwater Pathway Conclusion

Documented information indicates contamination of the upper caprock aquifer. The basal aquifer is located 600-800 feet bgs and is the principal source of drinking water in the area. Several wells exist within a 4-mile radius from the site serving an estimated population of 321,450.

3.3 Surface Water Pathway

3.3.1 Hydrologic Setting

The topography at the site is nearly flat, but has a very slight slope (less than 1 percent) towards Keehi Lagoon (west). The site elevation varies between 5 and 7 feet above sea level and is located approximately 500 feet from Keehi Lagoon. The location

of the site falls in an area determined to be outside the 500-year flood plain (reference 14). The 2 year, 24-hour rainfall for the site is approximately 4 inches (reference 5).

3.3.2 Surface Water Targets

Since the Pacific Ocean is approximately 500 feet from the site, a high likelihood exists for contaminated run-offs to enter the coastal waters. There are no drinking water intakes located within 15 downstream miles of the site. However, surface water bodies in the region are used for recreational and commercial fishing, recreational activities such as boating, and also habitats for threatened and endangered species. Approximately 10,753 pounds of marine life (fish, seaweed, etc.) were landed within 2 miles of the site. Within the 2 to 15 mile range, the data indicates that an additional 74,413 pounds of marine life were caught (reference 15). These represent the reported commercial catch data and do not include any recreational catch data as they are not available.

Keehi Lagoon and the Reef Runway are two sensitive wetland areas located about 500 feet and 1.5 miles southwest respectively of the site. Keehi Lagoon encompasses an area of approximately 340.7 acres and the Reef Runway has an approximate area of 792.0 acres. Both wetlands are used as feeding and resting areas for the federally endangered Hawaiian Stilt (Himantopus mexicanus knudseni). Keehi Lagoon is also used by the Hawaiian Owl (Asio flammeus sandwichensis), which is listed by the State of Hawaii

as endangered on Oahu (reference 16). The offshore waters of the Reef Runway and Keehi Lagoon are also inhabited by the green sea turtle (Chelonia mydas), a federally listed endangered species (reference 17). Also, this area of the Pacific Ocean is habitat for the federally listed endangered species, the humpback whale (Megaptera novaeangliae) (reference 18).

3.3.3 Surface Water Pathway Conclusion

There are no surface water intakes for drinking water purposes within 15 miles downstream of the site. The site is in close proximity to Keehi Lagoon wetland which is inhabited by endangered species and high levels of surface soil contamination at the facility has been documented. There appears to be a potential threat to the food chain due to migration off site via surface water.

3.4 Soil Exposure and Air Pathway

The site currently is a relatively flat, empty lot surrounded by a six-foot chain link fence and located in an industrialized area. Northeasterly trade winds predominate about 75 to 85 percent of the time and vary 10 to 20 miles per hour. The soil is contaminated with lead and potentially with PCB's.

3.4.1 Soil Exposure and Air Targets

The soil and air exposure pathways appear to pose a threat at the site as the surface soils of the property are contaminated. There are currently no workers on site every day, but the

property will be developed and will then have workers potentially exposed. Within 200 feet of the site is a large commercial retail store employing 50 to 100 workers. The nearest off-site population is about 1,000 residents within a quarter mile of the facility.

3.4.2 Soil Exposure and Air Pathway Conclusions

The surface soil is contaminated. Release of hazardous substances to the atmosphere is especially likely to occur during construction or remediation activities as the surface soils will be disturbed. Within a 4-mile radius of the site is a population of approximately 225,000.

4.0 Emergency Response Considerations

The National Contingency Plan [40 CFR 300.415(b) (2)] authorizes the Environmental Protection Agency to consider emergency response actions at those sites which pose an imminent threat to human health or the environment. For the following reasons a referral to Region IX's Emergency Response Section does not appear to be necessary:

- The property is adequately secured.
- There are currently no residents living on or within 200 feet of the site.

5.0 Summary

The Flynn-Learner site is located in an industrial area of

Honolulu. The site consists of approximately 132,000 square feet of flat, vacant land, with the exception of two empty above ground structures.

The site has been the subject of environmental investigations which indicate that the metal recycling activities at the site for the past 40 years have contaminated the shallow ground water and soil at the site. Contaminants of concern at the site that qualify as hazardous substances under CERCLA include lead and PCB's.

The pertinent Hazard Ranking System factors for the site are:

- Extensive surface and subsurface soil contamination exists at the site due to past metal recycling practices.
- There are 32 wells within a 4-mile radius of the site that serve approximately 320,000 people.
- A high potential exists for the release of contaminants into the Pacific Ocean, there by posing a potential threat to contaminate the food chain.
- The site is located in an industrial area and approximately 10,000 people regularly work\reside within 1 mile of the site.
- There are sensitive environments in close proximity, including wetlands and endangered species.

6.0 Decision Summary

REMEDIAL SITE ASSESSMENT DECISION - EPA REGION IX

Site Name: Flynn-LearnerEPA ID#: HID984468363

Alias Site Names: _____

City: Honolulu
HawaiiCounty or Parish: Honolulu

State: _____

Refer to Report Dated: May 1994Report type: Preliminary AssessmentReport developed by: Sheila Mackenzie

DECISION:

1. Further Remedial Site Assessment under CERCLA (Superfund) is not required because:1a. Site does not qualify for further remedial
site assessment under CERCLA
(Site Evaluation Accomplished - SEA)1b. Site may qualify for further
action, but is deferred to:RCRA
NRC

2. Further Assessment Needed Under CERCLA:

2a. (optional) Priority: ☒ Higher ☐ Lower2b. Activity
Type:PA
☒ SIESI
HRS evaluationOther: PA & SI evaluation were combined

DISCUSSION/RATIONALE:

Elevated levels of lead were
found in soils on-site. Site
requires a site inspection.Report Reviewed
and Approved by: FACERSignature: [Signature]Date: 6-28-94Site Decision
Made by: [Signature]Signature: [Signature]

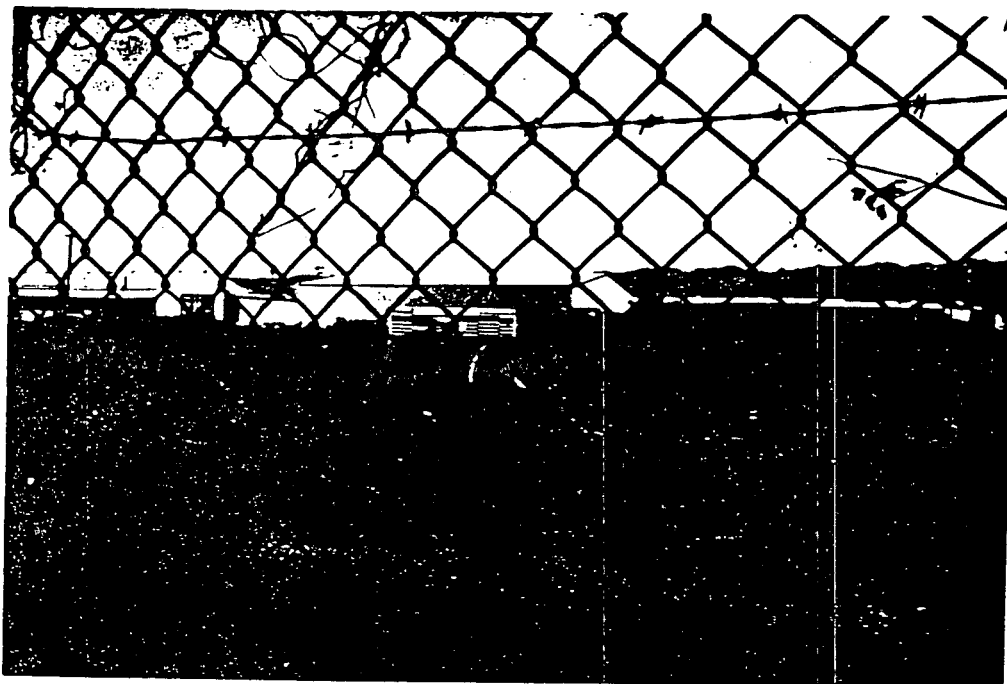
Date: _____

**APPENDIX A
Reference List**

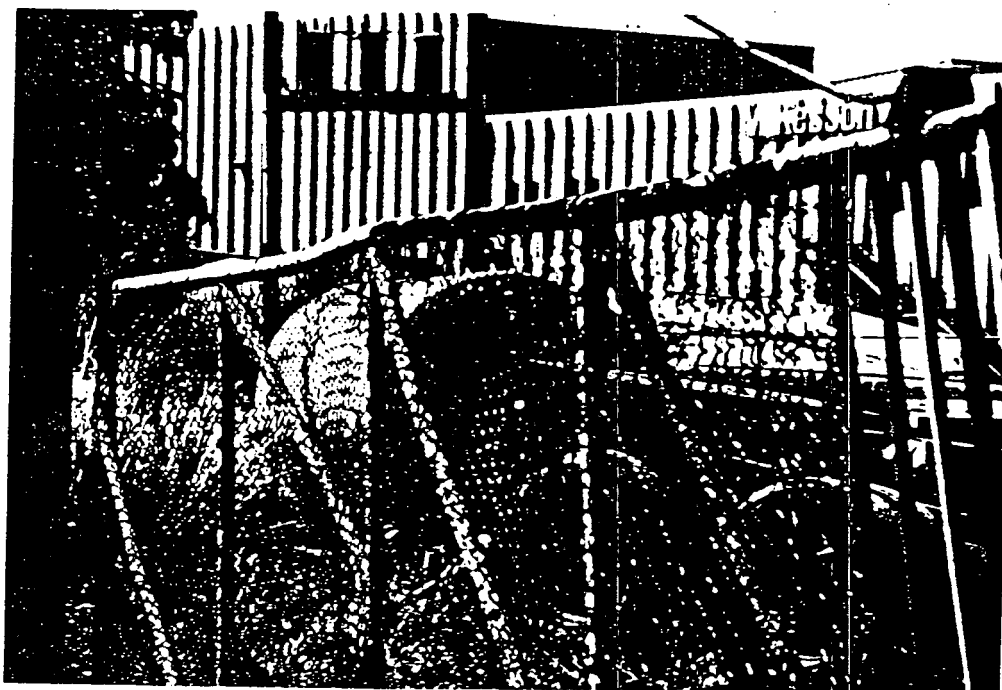
1. Uniform Hazardous Waste Manifest, June 1, 1992, Flynn-Learner, James C. Banigan.
2. State of Hawaii, Department of Health, HEER Office, Field Visit Report, March 9, 1994.
3. Cotton and Frazier Consultant's, Inc., "Flynn-Learner Sand Island Site Environmental Investigation Report", October 26, 1992.
4. Armstrong, R. Warick, 1983, "Atlas of Hawaii", Second Edition, Hawaii University Press, Honolulu, HI.
5. State of Hawaii Department of Natural Resources, "Rainfall Frequency Study for Oahu", Report R-73, Division of Water and Land Development, prepared by University of Hawaii Water Resources Center.
6. State of Hawaii, Department of Health, Offices of Solid Waste, Application for Solid Waste Management Permit, file on Flynn-Learner.
7. Stearns, T. Howard, "Geology of the State of Hawaii", 1985, Pacific Books, Palo Alto, California.
8. Cotton and Frazier Consultant's, Inc., "Risk Assessment Report for Flynn-Learner", October 22, 1993.
9. United States Department of Agriculture, "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, of Hawaii", 1972, Soil Conservation Service.
10. Mink, John F. and L. Stephen Lau, "Aquifer Identification and Classification for O'ahu: Groundwater Protection Strategy for Hawai'i", February 1990, Technical Paper No. 179, Water Resources Research Center, University of Hawaii at Manoa, Honolulu, Hawaii.
11. Hawaii Department of Budget and Finance, ICS Division, Statewide Geographical Information System, April 1994.
12. State of Hawaii Department of Land and Natural Resources Commission on Water Resources Management, "Ground Water Index and Summary", July 14, 1992.
13. Federal Emergency Management Agency, National Flood Insurance Program, Flood Insurance Rate Map City and County of Honolulu, Hawaii, Community Panel Number 150001 0115B, Map Revised Sept. 4, 1989.
14. State of Hawaii Department of Land and Natural Resources, Division of Aquatic Resources, "Main Hawaiian Islands Commercial Marine Landings by Island, Calendar Year 1990".

15. Environmental Center, Water Resources Research Center, University of Hawaii at Manoa, "Ecologically Sensitive Wetlands on Oahu: Groundwater Protection Strategy for Hawaii", December 1989.
16. National Oceanic and Atmospheric Administration, "Species Profiles: Life Histories and Environmental Requirements of Coastal Vertebrates and Invertebrates, Pacific Ocean Region; Report 1: Green Turtle, Chelonia mydas", by R.G. Forsyth and G.H. Balazs, July 1989.
17. National Oceanic and Atmospheric Administration, "Species Profiles: Life Histories and Environmental Requirements of Coastal Vertebrates and Invertebrates, Pacific Ocean Region; Report 2: Humpback Whale, Megaptera novaeangliae", by E.T. Nitta and J.J. Naughton, November 1989.
18. RCRA Notifiers List, Region IX, U.S. Environmental Protection Agency, February 9, 1994.

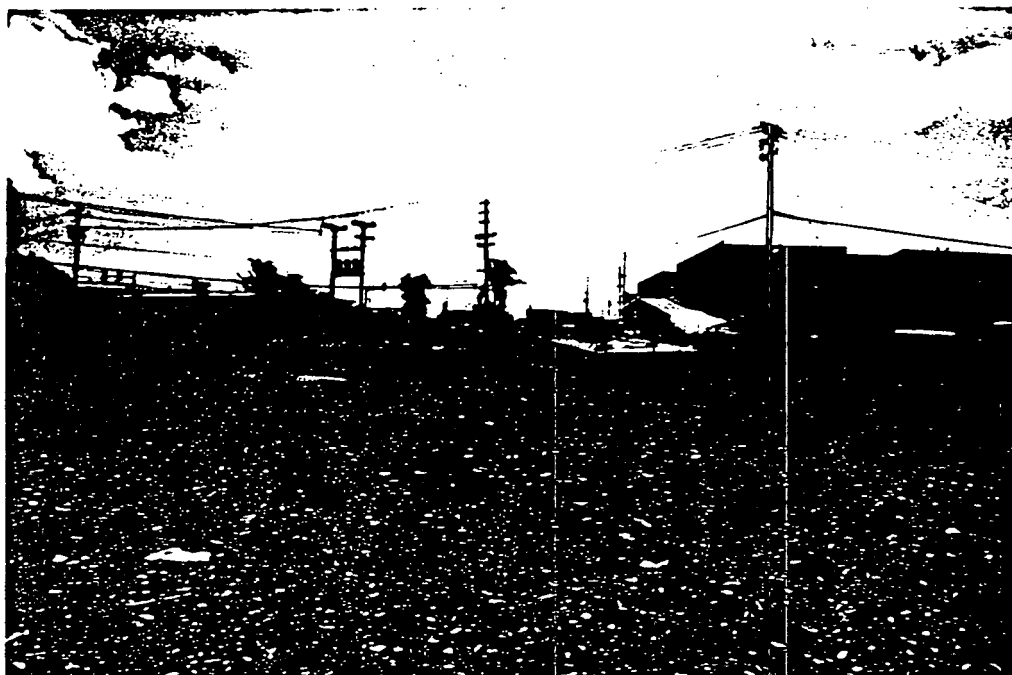
APPENDIX B
PHOTOGRAPHIC DOCUMENTATION



1. Excavation of PCB contaminated soil at the south corner of the site



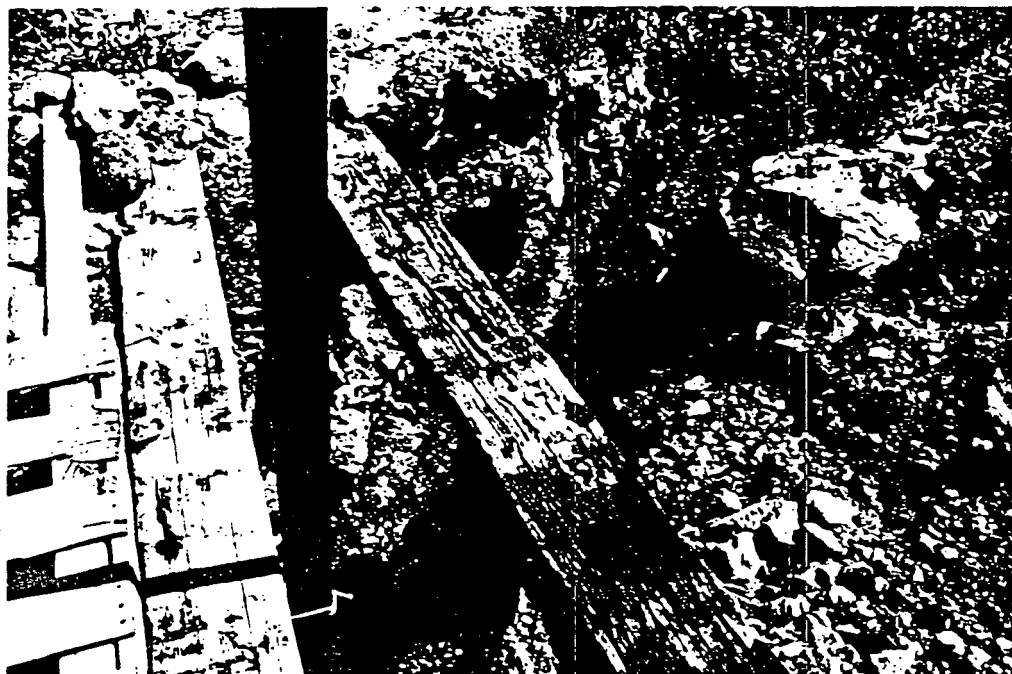
2. Abandoned UST located along the southeast border of the site



5. View of site looking to the south



6. View of site looking to the north (note scattered metal debris)



7. Excavation at south corner of site, floating product on groundwater



8. Another view of south corner excavation with floating product on groundwater



91-056 HANUA STREET • CAMPBELL INDUSTRIAL PARK • EWA BEACH, HAWAII 96707 • PH: (808) 682-5810 • FAX (808) 682-0604

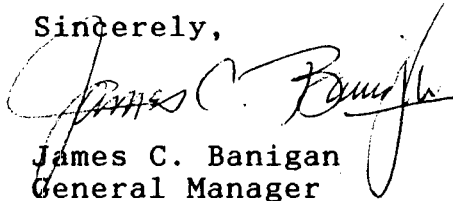
December 7, 1992

Ms. Prema Menon
Dept. of Health
HEER Program
Room 2503
5 Waterfront Plaza
Honolulu, Hawaii 96813

Dear Ms. Menon:

Pursuant to your request, attached please find a copy of the Uniform Hazardous Waste Manifest.

Sincerely,



James C. Banigan
General Manager

UNIFORM HAZARDOUS
WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Document

2. Page 1
of 2Information in the shaded areas
is not required by Federal law.

3. Generator's Name and Mailing Address

FLYNN LEONER 40 Hawaii Metal Recycling
91-056 Henua ST. Ewa Beach HI 96707

4. Generator's Phone

(808) 682 5810 ATTN: Jim B

5. Transporter 1 Company Name

Industrial Technology

6. US EPA ID Number

HA01981250147016

7. Transporter 2 Company Name

MAYSON Navigation

8. US EPA ID Number

K1AD0009126120

9. Designated Facility Name and Site Address

EnviroSafe Services of Idaho
10 1/2 miles NW Grandview Missile Base Rd.
Grandview Idaho

10. US EPA ID Number

ID0101073111416154

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone 808 682 5851

E. State Transporter's ID

F. Transporter's Phone 808 848 1211

G. State Facility's ID

H. Facility's Phone

800 274 1576

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)

12. Containers

No.

Type

13. Total
Quantity14. Unit
Wt/Vol

1. Waste No.

a.	RM Hazardous substance solid (Polychlorinated Biphenyls) ORM-E NA 9188	009CF180909P	NON-RCRA
b.	NON-RCRA, NON hazardous waste Liquid	038DMA11750G	NON-RCRA
c.			
d.			

J. Additional Descriptions for Materials Listed Above

11-A - PCB contaminated soil 2 pails
WPC11-B - NON-RCRA, NON-RCRA waste - Asbestos
WPC

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

ERG Book in vehicle

ERG # 31

Wear protected clothing when handling.

MAY 22 33 78

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name

JAMES C. DANIGAN

Signature

James C. Danigan

Month Day Year

10/6/92

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name

James P McAuloney

Signature

James P. McAuloney

Month Day Year

10/6/92

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name

Nathan S. Kim

Signature

Nathan S. Kim

Month Day Year

10/6/92

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name

SARA REESE

Signature

Sara Reese

Month Day Year

10/6/92

UNIFORM HAZARDOUS WASTE MANIFEST (Continuation Sheet)		21. Generator's US EPA ID No. 40 CFR Part 761 92112	Manifest Document 2	22. Page 2	Information in the shaded areas is not required by Federal law.
23. Generator's Name Flynn Learner % HPR R. 91-056 Hanua St. Ewa Beach HI 96707			24. State Hazardous Waste Document Number 25. State Generator's ID 26. State Transporter's ID 27. State Transporter's Phone 28. State Transporter's ID 29. State Transporter's Phone		
24. Transporter 3 Company Name Dont Trucking Co			25. US EPA ID Number DAHD009865825		
26. Transporter Company Name			27. US EPA ID Number		
28. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)			29. Containers	30. Total Quantity	31. Unit Wt/Vol
			No.	Type	R. Waste No.
a.	See item 11-A				
b.	See item 11-B				
c.					
d.					
e.					
f.					
g.					
h.					
i.					
S. Additional Descriptions for Materials Listed Above see item 11-5			T. Handling Codes for Wastes Listed Above		
32. Special Handling Instructions and Additional Information See item 15					
33. Transporter 3 Acknowledgement of Receipt of Materials			Date		
Printed/Typed Name DEAN E BECK			Signature <i>Dean E Beck</i>		Month Day Year 05 25 92
34. Transporter Acknowledgement of Receipt of Materials			Date		
Printed/Typed Name			Signature		Month Day Year
35. Discrepancy Indication Space					

FIELD VISIT REPORT

Site: Flynn-Learner EPA ID Number: HID984468363

Address: 120 Sand Island Access Road
Honolulu, Hawaii

Observations made by: Sheila Mackenzie

Site Representatives: Stuart Cotton, Cotton & Frazier
Environmental Consultants
Mark Frazier, Cotton & Frazier
Environmental Consultants

Field Visit Objectives: Gather information on site conditions, location, historical uses of the property and identify hazardous substances that may be stored or disposed of on site.

Summary of Activities and Observations:

A site visit was conducted at the Flynn-Learner property on March 9, 1994, at approximately 1:00 pm. The property is relatively flat, with areas of depression where rainwater will form puddles. The 132,000 ft² site is mostly vacant, with the exception of a small empty office building and shed, two mobile homes, a couple truck beds, and an abandoned underground storage tank. At the southwest end of the property are open excavation pits with standing groundwater approximately 6-7 feet below ground surface. Free floating petroleum product was observed on the surface of the groundwater. The surface soil was uniformly littered with bits and pieces of various metals.

The past history of the site was discussed, as well as the results of the environmental investigations. The main concern at the site appears to be high levels of lead in surface soils. There were PCB contaminated soils on site, however it has been excavated and disposed of on the mainland. The surrounding area is industrial, no residence in the immediate vicinity. The property is surrounded by a six foot chain-link fence and the only current on-site human exposures would be the occasional environmental investigator or property owners. There is a large retail store immediately adjacent to the site and Keehi Lagoon is approximately 200 feet to the west.

COTTON and FRAZIER Consultants, Inc.
"Environmental Solutions"

**FLYNN-LEARNER SAND ISLAND SITE
ENVIRONMENTAL INVESTIGATION REPORT**

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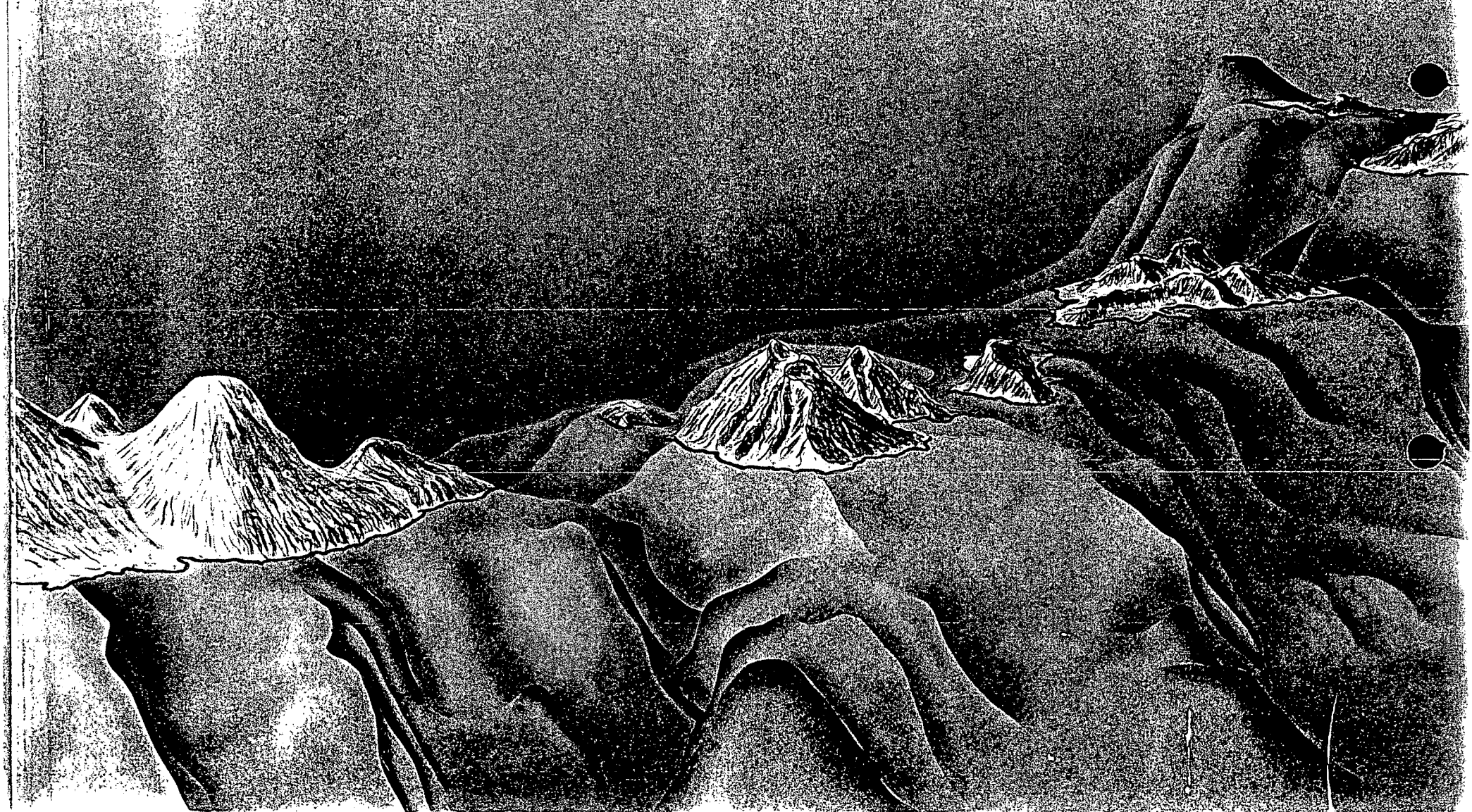
Appendix A. Analytical Lab Analysis

Appendix B. Field TLC Results

SECOND EDITION

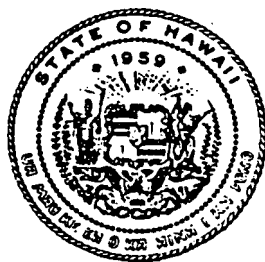
Atlas of Hawaii

REFERENCE #4



RAINFALL FREQUENCY STUDY
FOR OAHU

Report R-73



State of Hawaii
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Water and Land Development

Prepared by

UNIVERSITY OF HAWAII
Water Resources Research Center

Thomas W. Giambelluca
L. Stephen Lau
Yu-Si Fok
Thomas A. Schroeder

Honolulu, Hawaii
1984



US Army Corps
of Engineers
Honolulu District

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

April 2, 1985

Mr. Jan C.G. Van Hemert, Manager
Flynn-Learner
120 Sand Island Access Road
Honolulu, HI 96819

Application No. SW-000186

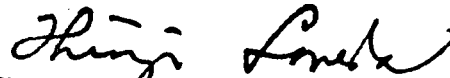
Dear Mr. Van Hemert:

Subject: Solid Waste Management Permit, SW-176186

In accordance with the provisions of Chapter 342, HRS, and Administrative Rules, Title 11, Chapter 58, entitled Solid Waste Management Control, the Department of Health hereby issues the enclosed Solid Waste Management Permit for the subject facility.

The permittee may appeal to the Director of Health any of the conditions of the issued permit. The appeal must be in writing and submitted to the Director within twenty (20) days after receipt of this letter.

Sincerely,



SHINJI SONEIDA, CHIEF
Environmental Protection and
Health Services Division

AD/st
Enclosures
cc: PIE

STATE OF HAWAII
DEPARTMENT OF HEALTH

SOLID WASTE MANAGEMENT PERMIT

IS HEREBY ISSUED TO

FLYNN-LEARNER

(Corporation, company, government agency, firm, etc.)

AUTHORIZING OPERATION

RECLAMATION FACILITY

WHICH IS LOCATED AT

120

(Number)

SAND ISLAND ACCESS ROAD

(Street)

HONOLULU

(City)

OAHU

(Island)

and which is subject to the State of Hawaii Administrative Rules, Title 11, Chapter 58, Solid Waste Management Control, and to all of the following special conditions:

PARTS I AND II

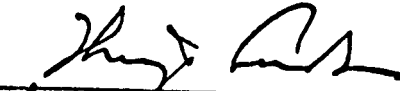
Acceptance of this permit constitutes an acknowledgement and agreement that the holder will comply with all Rules, Regulations, and Orders of the Department and the conditions precedent to the granting of this permit.

PERMIT NO. SW-176186 DATE ISSUED: 4/2/85 EXPIRATION DATE: April 1, 1990

APPLICATION NO. SW-000186

FORM SW-P-2 7/1/84

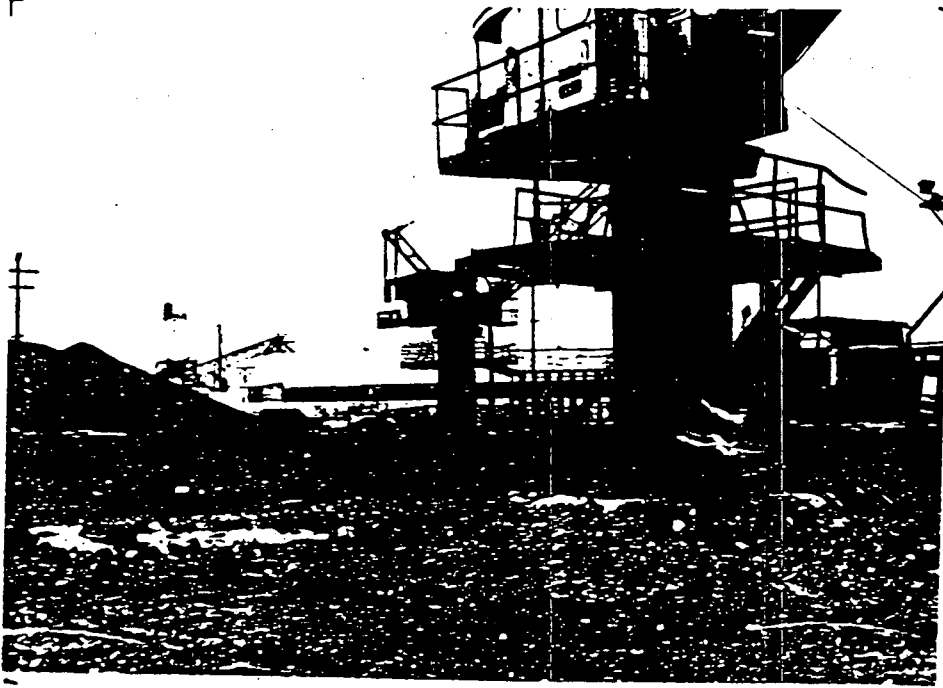
BY


for DIRECTOR OF HEALTH

FACILITY FLYNN-LEARNER Metal Recycler
LOCATION 120 Sand Island
PHOTO TAKEN BY J. Ruiz DATE OCT 8, 1991



Area cleaned of metals



INSPECTION NO: SW- 91-017

STATE DEPARTMENT OF HEALTH
SOLID AND HAZARDOUS WASTE BRANCH
FIVE WATER FRONT PLAZA, SUITE 250
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813

INSPECTION REPORT

FIRM NAME: Flynn-Learner DATE: June 25, 1991
MAILING ADDRESS: 120 Sand Island Road
SOURCE ADDRESS: Same
TELEPHONE: 845-2241
PERSON CONTACTED: Lawrence Kalilikane TITLE: Ass't Manager
REASON FOR INSPECTION:
 ROUTINE: () COMPLIANCE SCHEDULE: ()
 PERMIT REQUIREMENT: () VARIANCE CONDITION: ()
 OTHER (X) EXPLAIN: Pre-closure.

OBSERVATION: On June 21, 1991 called Flynn-Learner company to find out if the facility was officially closing due to rumors of closure. Spoke with Ass't Manager, Lawrence Kalilikane and he claims that the facility is officially closing in the next 10 days. They are no longer accepting anything from the public and all scrap metal is being taken down to the new (Hawaii Metal Recycling Co.) Campbell Park Industrial facility. Questioned Mr. kalilikane if an environmental assessment of the site had been done and he was not aware. He said that Gary Chase will get in touch with the Department on the issue.

On June 26, 1991, spoke with Mr. Chase on the closure of the facility and he claims that they have stopped accepting materials from the public. They are presently clearing the site and all scrap metal removed to the new site. He also mentioned that an environmental assessment of the site will be made as soon as a contractor is hired. The company is in the bidding process for a contractor to perform the Environmental assessment. Mr. Chase will notify the department once a contractor is chosen and will keep the department informed. The department concern are the previous baler and the shearing area site due to potential oil contamination.

VIOLATION(S): () REGULATIONS: CHAPTER 11-58 SECTION 4
 () COMPLIANCE SCHEDULE () VARIANCE CONDITION
 () OTHER:

CAUSE OF VIOLATION: None

RECOMMENDATION: Keep the Department aware of the facility closure.

REFERRED TO: GS DATE: June 25, 1991

REASON: Making aware of the facility closure.

FOLLOW-UP NEEDED: YES () WHEN: August 91

NO (X) WHY:

Inspector
JOSE RUIZ

FACILITY FLYNN - LEARNER

LOCATION 120 SAND ISLAND RD.

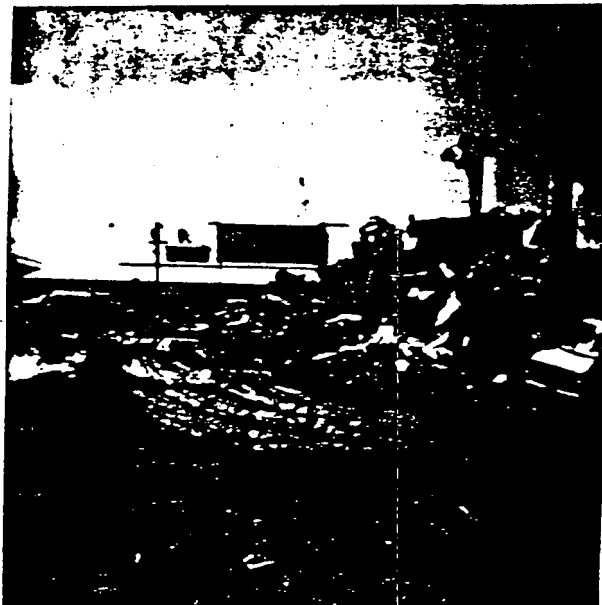
PHOTO TAKEN BY J. Ruiz DATE JUN 25, 1991

JUNE 25, 91



FLYNN - LEARNER
120 SAND ISLAND
metal scrap being removed
to new site & completely int.

JUNE 25, 91

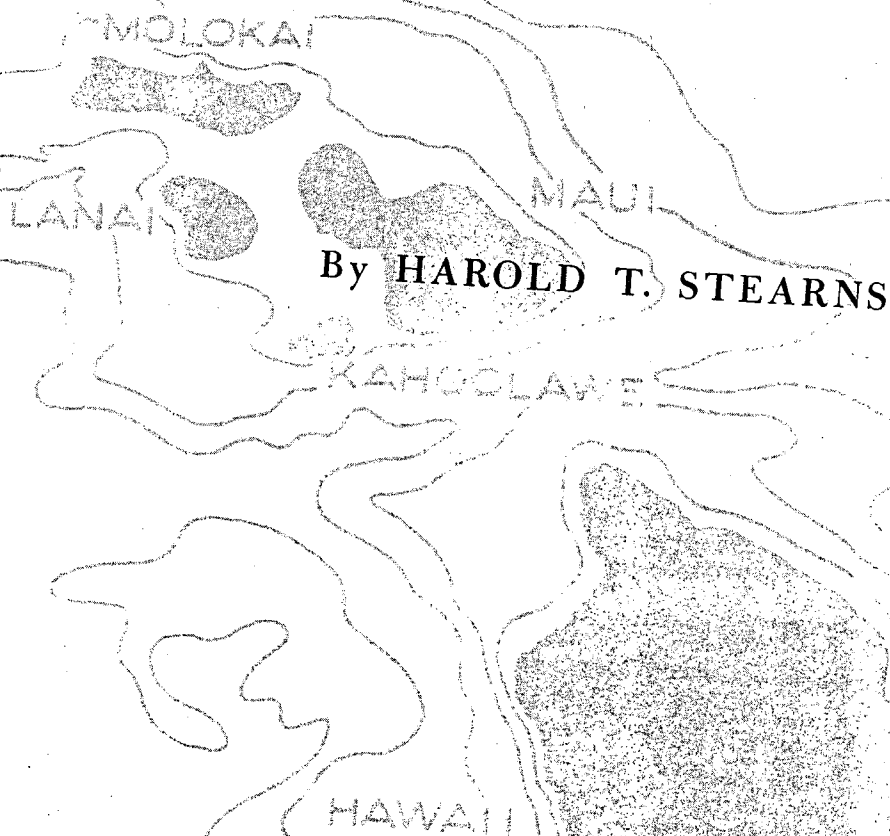


FLYNN - LEARNER
120 SAND ISLAND
clearing area - moved to
Industrial Park

REFERENCE # 7

GEOLOGY OF THE STATE OF HAWAII

SECOND EDITION



By HAROLD T. STEARNS

PACIFIC BOOKS, *Publishers*
Palo Alto, California

Risk Assessment Report

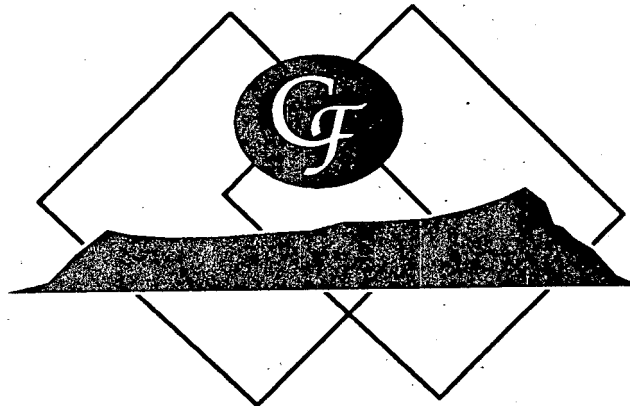
For:
Flynn Learner
91-056 Hana Street
Ewa Beach, Hawaii 96707

Location:
120 Sand Island Access Road

October 22, 1993

CFC Job #93064

**Cotton and Frazier
Consultants, Inc.**



"Environmental Solutions"

P.O. BOX 27126
Honolulu, Hawaii 96827

PHONE (808) 599-1993
FAX (808) 599-1502

Technical Report No. 179

**AQUIFER IDENTIFICATION AND CLASSIFICATION
FOR O'AHU: GROUNDWATER PROTECTION
STRATEGY FOR HAWAII**

**John F. Mink
L. Stephen Lau**

**February 1990
Revised**

Water Resources Research Center

University of Hawaii at Manoa
Honolulu, Hawaii 96822



Figure 1.13. Aquifer classification map, Honolulu, O'ahu, Hawai'i

T (topography). Land configuration in Hawai'i is generally irrelevant as a direct influence on the recharge of groundwater. In steep topography the runoff-rainfall ratio is high, but even here significant infiltration takes place.

I (infiltration in vadose zone). In unsaturated rock beneath the soil-saprolite cover, infiltration follows a fairly direct path to the unsaturated zone.

C (conductivity of aquifer). All of the main Hawai'i aquifers in basalt are extremely permeable with hydraulic conductivities in excess of 1000 ft (304.8 m)/day on a regional scale. Limestone aquifers are also highly permeable, while sediments are generally poorly permeable. The alkalic series of volcanic rocks that followed the primary basalts are moderately permeable.

The DRASTIC method of estimating pollution potential in Hawai'i has limited applicability, but in a modified form it can be useful in organizing an environmental data base for examining contamination problems.

AQUIFER CLASSIFICATION AND AQUIFER CODES

Shortly before the Hawaii State Department of Health initiated the groundwater protection program, work had begun in classifying and systematizing groundwater occurrences by the University of Hawaii Water Resources Research Center (Mink and Sumida 1984). This work was a follow-up to an earlier classification attempt sponsored by the Department of Health as part of the original Underground Injection Control program (First West Engineers 1978).

The classification scheme reported by Mink and Sumida (1984) is the starting point for developing an Aquifer Code. Classification is based on a hierarchy of descriptors beginning with general location by Island and Aquifer Sector, to which belongs a set of Aquifer Systems, within which are a variety of Aquifer Types. Sectors primarily reflect broad hydrogeological features and, secondarily, geography. Aquifer Systems are more specifically defined by hydrogeologic continuity, in particular hydraulic connections among units; Aquifer Types are differentiated by distinctive features of hydrology and geology.

In brief, the hierarchy is as follows:

- a. Island—The global locator
- b. Sector—A large region with hydrogeological similarities
- c. System—An area within a Sector showing hydrogeological continuity
- d. Type—Portions of a System having the same hydrological and geological features.

Islands are coded by number in conformance with the U.S. Geological Survey (1975) protocol. Each Sector is coded with a two-digit number and by a geographic name except where locational confusion might result, in which case the general locators North, South, East,

and West, or a traditional geographic term such as Windward, are used. A two-digit number is applied to each Aquifer System, which also can be referred to by a geographic name. Three digits describe fundamental hydrology and geology to constitute the Aquifer Type.

The numerical code has the form, 1 11 11 111, in which the first number is the Island, the next two represent the Sector, the following two the System, and the last three the Type. Island numbers are 1 (Ni'ihau), 2 (Kaua'i), 3 (O'ahu), 4 (Moloka'i), 5 (Lāna'i), 6 (Maui), 7 (Kaho'olawe), and 8 (Hawai'i). Sector numbers start at 01 in each Island, and System numbers also start at 01 in each Sector.

Hydrology is uniquely described by a pair of digits and geology by a single digit. Identifying characteristics with their codes are as follows.

HYDROLOGY. Aquifer Types are defined as either basal or high level, and as either unconfined or confined. Their numbers with brief descriptions are as follows:

No.	Type	Description
1	Basal	Fresh water in contact with seawater
2	High Level	Fresh water not in contact with seawater
1	Unconfined	Where the water table is the upper surface of the saturated aquifer
2	Confined	Aquifer is bounded by impermeable or poorly permeable formations; top of the saturated aquifer is below the surface of the groundwater
3	Confined or Unconfined	Where the actual condition is uncertain.

Using the above coding, groundwater can be 11 or 12, or 21 or 22. Where confining conditions are unclear, the second digit is taken as 3.

GEOLOGY. Aquifers are categorized as occurring in the flank lavas of the volcanic domes, in rift zones characterized by dikes, on poorly permeable perching members, or within the sedimentary sequence. Flank aquifers normally are horizontally extensive and display the lowest heads and usually carry basal water; rift aquifers are segmented into compartments by dikes; perched aquifers lie on impermeable formations but are not ordinarily very extensive; and sedimentary aquifers are comprised of alluvial and marine sediments deposited by erosion and biogenic processes. The geologic codes are as follows:

No.	Type	Description
1	Flank	Horizontally extensive lavas
2	Dike	Aquifers in dike compartments
3	Flank/Dike	Indistinguishable

4	Perched	Aquifer on an impermeable layer
5	Dike/Perched	Indistinguishable
6	Sedimentary	Non-volcanic lithology

One of the above numbers attached to the two hydrology numbers defines the Aquifer Type.

The sequence of all numbers from Island through geology is called the Aquifer Code. Each Aquifer Type has an eight-digit code which is unique. An example of an Aquifer Code for groundwater occurrence in O'ahu is

3	O'ahu Island
01	Honolulu Sector
04	Moanalua Aquifer System
111	Basal Unconfined Flank

The Aquifer Code for the above is 30104111. There can be no repetition elsewhere in the State. The code is suited to computer data basing having great retrieval flexibility.

A variety of important information related to the aquifers can be appended to each Aquifer Code. Certain hydrogeological parameters and quantities, such as rainfall, infiltration, sustainable yield and storage, can be appended to the code to expand its utility. For example, items relevant to groundwater contamination can be expressed as a separate numerical code and attached to the Aquifer Code.

Table 1 lists the Aquifer Codes for the island of O'ahu along with Sector and Aquifer System names. O'ahu includes 6 Sectors, 24 Aquifer Systems, and 90 Aquifer Codes. Also listed is the Status Code of each Aquifer Type. The Status Code, which is described in the next section, summarizes elements crucial to the groundwater protection strategy.

GROUNDWATER PROTECTION: STATUS CODE

Concepts of EPA's groundwater classification conforming to Hawai'i conditions are used to devise a groundwater Status Code that describes development stage, utility, salinity, uniqueness, and vulnerability to contamination of the aquifers. The Status Code is conveniently attached to the Aquifer Code, and the combination is an efficient representation of location, hydrology, geology, utility, water quality, and contamination potential of groundwater resources in every part of the island.

The five-digit Status Code consists of a single number from each of five separate descriptive categories. The categories and their status elements with identifying numbers are as follows:

- A. Development Stage
 - 1. Currently used
 - 2. Potential use
 - 3. No potential use
- B. Utility
 - 1. Drinking
 - 2. Ecologically important
 - 3. Neither
- C. Salinity (mg/l Cl^-)
 - 1. Fresh (<250)
 - 2. Low (250-1000)
 - 3. Moderate (1000-5000)
 - 4. High (5000-15,000)
 - 5. Seawater (>15,000)
- D. Uniqueness
 - 1. Irreplaceable
 - 2. Replaceable
- E. Vulnerability to Contamination
 - 1. High
 - 2. Moderate
 - 3. Low
 - 4. None

Only one number from each major category listed above is allowable in the Status Code. For instance, a currently developed groundwater source (1), used for drinking (1), having a salinity of less than 250 mg/l Cl^- (1), being irreplaceable (1) and highly vulnerable to contamination (1), would have the Status Code 11111. If it were ecologically important but not suitable for drinking with a salinity of 750 mg/l Cl^- , other categories the same, the code would be 12211.

The categories and their elements are derived from the U.S. EPA (1984) groundwater classification modified by fundamentals of the Hawai'i groundwater environment. Application of a detailed vulnerability assessment, such as a modified form of DRASTIC, could be used in the Vulnerability to Contamination category.

Brief explanations of the Status Code categories and their elements are as follows.

DEVELOPMENT STAGE. Aquifers are differentiated according to those already being used (Currently Used), those with potential utility (Potential Use), and those having no potential developability.

UTILITY. Identifies aquifers by use. Groundwater classed as Drinking may also be Ecologically Important, but that classed as Ecologically Important may not be used for drinking. Drinking takes precedence over Ecologically Important.

SALINITY. The gradation of groundwater from fresh to seawater is a feature of all basal aquifers in Hawai'i. Basal aquifers comprise, by far, the most voluminous sources of groundwater. Chloride content is the class definer rather than total dissolved solids (TDS) because it is routinely reported in the Hawai'i literature. The class limits inevitably are somewhat arbitrary but incorporate the following logic.

1. Fresh (<250 mg/l): The upper limit of the standard for drinking water is 250 mg/l Cl^- .
2. Low (250-1000 mg/l): Much agriculture, in particular sugarcane, can be irrigated with water containing up to 1000 mg/l Cl^- .
3. Moderate (1000-5000 mg/l): Brackish water of this salinity may serve as feed water for desalinization in the future.
4. High (5000-15,000 mg/l): The high salinity class, not yet seawater, is arbitrarily designated for water that is between potentially economically valuable water and seawater.
5. Seawater (>15,000 mg/l): True seawater has a chloride content of 18,980 mg/l.

UNIQUENESS. The classes Irreplaceable and Replaceable are direct EPA derivatives. The island of O'ahu does not have any groundwater of value which could be classified as replaceable.

VULNERABILITY TO CONTAMINATION. In O'ahu because of the limits of the resources, interconnection among groundwater sources and the relatively rapid time of groundwater travel, aquifers can be described simply as being either vulnerable or not vulnerable to contamination. Most unconfined aquifers are vulnerable; confined aquifers may or may not be. A refinement in the degree of vulnerability may be instituted by employing some modified form of the DRASTIC, or similar, index. The one used in this classification (High, Moderate, Low, None) is based on familiarity with environmental conditions.

In summary, a groundwater classification scheme which includes source as well as status information has been created. The Aquifer Code consists of locators, hydrology and geology, and reads as follows: Island-Aquifer Sector-Aquifer System-Aquifer Type. The code consists of eight digits: one for the Island, two each for Sector and System, and three for Type (hydrology and geology).

The Status Code contains five digits and, combined with the Aquifer Code, results in a 13-digit code. For example, the code 30104111 (11111) defines an aquifer in O'ahu, Honolulu Sector, Moanalua System, in which the groundwater is unconfined basal in flank lavas. The

last five digits tell that the aquifer is currently used to supply drinking water having less than 250 mg/l Cl^- , and that it is an irreplaceable source highly vulnerable to pollution.

Although the original scope of the project referred specifically to Class I (Special) Groundwater, all other groundwaters in O'ahu have been classified. As a matter of interest, Class I Groundwater Status Codes are either 11111 (Drinking) or 12n11 (Ecologically Important), in which n is a number (1-5) defining the salinity range (<250 to >15,000 mg/l Cl^-).

AQUIFER CLASSIFICATION MAPS

Accompanying this explanation of Aquifer Codes and Status Codes are fifteen quadrangles for O'ahu (reduced from a scale of 1:24,000) on which are plotted Sector, System, and Type boundaries. Within each Aquifer Type the Aquifer Code is printed, to which is appended the Status Code within parentheses.

In coastal plains where sedimentary caprock aquifers rest on primary basalt aquifers, two Aquifer and Status Codes separated by a slash are printed. The numerator code is for the upper aquifer and the denominator for the lower aquifer.

REFERENCES

- First West Engineers, Inc. 1978. Underground injection control study. Report prepared with J.F. Mink (special Consulting Hydrologist-Geologist) for Department of Health, State of Hawaii, Honolulu (July). 71 p.
- Lau, L.S., and Mink, J.F. 1987. Organic contamination of groundwater: A learning experience. *J. Am. Water Works Assoc.* 79(8):37-42.
- Mink, J.F., and Sumida, S.T. 1984. Aquifer classification, state of Hawai'i. Tech. Memo. Rep. No. 75, Water Resources Research Center, University of Hawaii at Manoa, Honolulu. 34 p.
- U.S. Environmental Protection Agency. 1984. Ground-water protection strategy. Office of Ground-Water Protection, Washington, D.C. 20460 (August). 56 p. + unpaginated Attachments I-VI.

FLYNN-LEARNER
120 SAND ISLAND ACCESS ROAD
HONOLULU, HAWAII 96819

LONGITUDE: -157 53 36.310
LATITUDE: 21 19 37.294

GROUNDWATER WELLS

QUARTER MILE

- No wells -

HALF MILE

- No wells -

ONE MILE

Record	well_no	well_name	use
757	2053-09	KALIHI	IND

TWO MILE

Record	well_no	well_name	use
608	1952-06	KALIHI PUMP STA	MUN
609	1952-07	KALIHI PUMP STA	MUN
610	1952-08	KALIHI PUMP STA	MUN
613	1952-11	KAPALAMA BATTERY	IND
614	1952-12	KAPALAMA	IND
615	1952-13	KAPALAMA BATTERY	IND
618	1952-16	KALIHI PUMP STA	MUN
619	1952-17	KALIHI PUMP STA	MUN
620	1952-18	KALIHI PUMP STA	MUN
621	1952-19	KALIHI PUMP STA	MUN
622	1952-20	KAPALAMA BATTERY	IND
623	1952-21	KAPALAMA BATTERY	IND
624	1952-22	KALIHI PUMP STA	MUN
628	1952-26	KAPALAMA BATT	IND
629	1952-27	KAPALAMA BATT	IND
630	1952-28	KAPALAMA BATT	IND
633	1952-31	KAPALAMA BATTERY	IND
634	1952-32	KAPALAMA BATTERY	IND
743	2052-07	KAMEHAMEHA SCH 1	DOM
744	2052-08	KALIHI SHAFT	MUN
745	2052-09	FT SHAFTER	DOM
747	2052-11	KAMEHAMEHA SCH 2	DOM
748	2052-12	JONATHAN SPRINGS	MUN
758	2053-10	FT SHAFTER	DOM
759	2053-11	FT SHAFTER	DOM
855	2153-07	MOANALUA	DOM
858	2153-10	MOANALUA WELLS 1	MUN
859	2153-11	MOANALUA WELLS 2	MUN
860	2153-12	MOANALUA WELLS 3	MUN

THREE MILE

Record	well_no	well_name	use
370	1751-01	ALA MOANA	IND

371	1751-02	ALA MOANA	IND
455	1851-07	PACIFIC CLUB	DOM
460	1851-12	BERETANIA P STA	MUN
461	1851-13	BERETANIA P STA	MUN
472	1851-24	BERETANIA P STA	MUN
479	1851-31	BERETANIA P STA	MUN
480	1851-32	BERETANIA P STA	MUN
481	1851-33	BERETANIA P STA	MUN
482	1851-34	BERETANIA P STA	MUN
483	1851-35	BERETANIA P STA	MUN
502	1851-54	QUEENS HOSP	DOM
522	1851-74	BERETANIA STA	MUN
523	1851-75	BERETANIA STA	MUN

FOUR MILE

Record	well_no	well_name	use
367	1750-09	ALA MOANA	IND
940	2254-01	HALAWA RED HILL	MUN

POPULATION DATA

QUARTER MILE: 1078

HALF MILE: 1185

ONE MILE: 10148

TWO MILE: 71455

THREE MILE: 73670

FOUR MILE: 67139

REFERENCE 12

LOAN COPY

1

COMMISSION ON WATER RESOURCE MANAGEMENT
Department of Land and Natural Resources
Punchbowl Street, Room 227
Honolulu, Hawaii 96813

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

GROUND WATER INDEX AND SUMMARY

July 14, 1992

STATE OF HAWAII / DEPARTMENT OF LAND AND NATURAL RESOURCES / COMMISSION ON WATER RESOURCE MANAGEMENT
GROUND WATER INDEX AND SUMMARY
JULY 14, 1992

ISLAND CODE 3: OAHU

WELL NUMBER	NAME OR LOCATION	QUAD MAP	OWNER OR USER	YEAR DRLD	DRILLER	COORDINATES LAT LONG	PHYSICAL DATA		ELEVATIONS IN FEET				INITIAL TEST		PUMP TEST RESULTS					WATER SUPPLY			WELL NUMBER			
							TYPE	C&G	TOTAL	GRND	BOTT	BOTT	BOTT	STAT	CHLOR	PUMP	DRAM	SPEC	CHLOR	WATR	PUMP	DRAFT	CHLORIDES	MAJOR		
							CONS	DIA	DEPTH	SURF	SOLID	PERF	OF	HEAD	MG/L	RATE	DOWN	CAP	MG/L	TEMP	CAPAC	MGD, YR	MG/L, YEAR	USE, YR		
							IN	FT		CASE	CASE	HOLE	FT			GPM	FT			C	MGD		MAX	MIN		
3-1940-05 MAKAPUU	15 SEA LIFE PARK	1963	SAMSON-ZERBE	211905	1574002	16	100	32	0	-68															DIS, 74	3-1940
3-1940-06 MAKAPUU	15 SEA LIFE PARK	1963	SAMSON-ZERBE	211906	1574004	16	100	32	0	-68															DIS, 74	3-1940
3-1940-07 MAKAPUU	15 SEA LIFE PARK	1966	ROSCOE MOSS	211907	1574007	PER 16	80	20	-30	-60															DIS, 74	3-1940
3-1940-08 MAKAPUU	15 SEA LIFE PARK	1968	ROSCOE MOSS	211906	1574008	PER 16	175	30	0	-145	14.5					2450	14.0	175							DIS, 74	3-1940
3-1940-09 MAKAPUU	15 SEA LIFE PARK	1969	ROSCOE MOSS	211916	1574023	PER 8	39	30		-9	10.4				1160										DIS, 74	3-1940
3-1940-10 OCEANIC INST	15 OCEANIC INST	1981	ROSCOE MOSS	211917	1574023	PER 16	262	35	-90	-227	1.0					1200	6.8	176		27.0	4.32				OTR, 81	3-1940
3-1940-11 MAKAPUU	15 SEA LIFE PARK		LAYNE INTL	211910	1574002	ROT 20	30	3	-17	-27															UNU, 87	3-1943
3-1943-01 MAIHAHALO II	15 BONOLULU BMS	1981	WAT RES INTL	211958	1574358	ROT 12	520	350	100	-160	-170	36.9				646	43.9	15	20	24.2		0.2, 77	26, 77		MUN, 77	3-1946
3-1946-01 PALOLO TUNNEL	15 BONOLULU BMS	1920	N A WALL	211936	1574627	TUN		987																	DOM, 80	3-1947
3-1947-01 PALOLO VALLEY	13 GILLMAR J	1973	CONTL DRUG CO	211914	1574706		4	200	670	610	470															
3-1947-02 MAHUA TUNNEL 3	13 BONOLULU BMS	1923	BON WATERWORKS	211959	1574733	TUN			760													0.2, 77	13, 66		MUN, 77	3-1947
3-1948-01 MAHUA II	13 BONOLULU BMS	1983	ROSCOE MOSS	211959	1574818	PER 12	786	384	-100	-402	-402	74.0	20			714	14.7	49	12	20.8	0.00				MUN, 84	3-1948
3-1948-02 MAHUA III	13 BONOLULU BMS	1985	ROSCOE MOSS	211903	1574832	PER 10	226	182	-44	-44	158.5	20				45	145.0	0	20						UNU, 87	3-1948
3-1950-01 PACIFIC BRIGHS	13 BON SARE	1918	MCCANDLESS	211928	1575058		12	220	131	37	-89	31.0	55									0.0, 76	75, 41		UNU, 76	3-1950
3-1951-01 BOTANIC GARDEN	13 C&C PARKS&REC	1883		211911	1575138		8	767	35	-732	31.4	55													UNU, 74	3-1951
3-1951-02 LANAKILA	13 STATE OF HAW	1894	MCCANDLESS	211951	1575152		8	120	50	-40	-70														SLD, 29	3-1951
3-1951-03 VINEYARD BLVD	13 SALVATION ARM	1905	MCCANDLESS	211920	1575150		10	1029	23	-986	-1006	29.6	70												SLD, 31	3-1951
3-1951-04 LILIRA	13 CHUN BOON MKT	1939	MULLIN	211911	1575129		6	53																	OTR, 74	3-1951
3-1952-01 N KING ST	13 BARN EVANGELCL	1882		211930	1575209		5	384	21	-273	-363	31.4	179												SLD, 45	3-1952
3-1952-02 KALIBI	13 FELIX F	1883		211958	1575252		8	600	30	-350	-570	13.4													SLD, 26	3-1952
3-1952-03 DILLINGHAM BLVD	13 OAHU R R & L	1900	PINKHAM	211916	1575206		10	530	5	-473	-525	30.1	187												UNU, 74	3-1952
3-1952-04 KAPALAMA	13 ARIN Y TRUST	1900	MCCANDLESS	211950	1575202		8	150	16	-134	30.1	118										0.1, 22.5	318, 126	55, 42	UNU, 74	3-1952
3-1952-05 KAPALAMA	13 BISHOP ESTATE	1900	MCCANDLESS	211952	1575203		7	130	22	-42	-108	32.0	123												OSR, 74	3-1952
3-1952-06 KALIBI PUMP STA	13 BONOLULU BMS	1900	MCCANDLESS	211953	1575227		12	460	21	-439	30.4	80										5.1, 76	136, 116	64, 80	SLD, 47	3-1952
3-1952-07 KALIBI PUMP STA	13 BONOLULU BMS	1900	MCCANDLESS	211953	1575227		12	475	20	-209	-455	28.8	80												MUN, 74	3-1952
3-1952-08 KALIBI PUMP STA	13 BONOLULU BMS	1900	MCCANDLESS	211953	1575227		12	490	21	-469	29.7	80													MUN, 74	3-1952
3-1952-09 KAPALAMA	13 BISHOP ESTATE	1901	MCCANDLESS	211953	1575203		9	127	21	-44	-106	31.9	122												SLD, 47	3-1952
3-1952-10 KAPALAMA	13 ISHIMOTO T	1901	MCCANDLESS	211952	1575204		12	251	22	-69	-229	30.2	112												SLD, 52	3-1952
3-1952-11 KAPALAMA BATTERY	13 CASTLE & COOKE	1913	MCCANDLESS	211916	1575221		8	513	5	-487	-508	31.0	200									2.5, 76	200, 94		IND, 74	3-1952
3-1952-12 KAPALAMA	13 CANN SLF STOR	1920	MCCANDLESS	211913	1575220		9	599	6	-522	-593	28.2	170									0.2, 76	392, 170		IND, 74	3-1952
3-1952-13 KAPALAMA BATTERY	13 CASTLE & COOKE	1923	MCCANDLESS	211917	1575222		10	650	4	-546	-646	28.4	156												IND, 74	3-1952
3-1952-14 KAPALAMA	13 BON GAS	1923	MCCANDLESS	211912	1575230		8	682	4	-609	-678	28.2	266												OTR, 81	3-1952
3-1952-15 VINEYRD BLVD	13 PALAMA SETLMT	1924	MCCANDLESS	211936	1575200		12	335	27	-173	-308	27.8	126									0.0, 76	126, 67		OTR, 74	3-1952
3-1952-16 KALIBI PUMP STA	13 BONOLULU BMS	1926		211953	1575227		12	430	21	-219	-409	25.6													MUN, 74	3-1952
3-1952-17 KALIBI PUMP STA	13 BONOLULU BMS	1926		211953	1575227		12	401	19	-344	-382	26.1	88												MUN, 74	3-1952
3-1952-18 KALIBI PUMP STA	13 BONOLULU BMS	1926		211953	1575227		12	442	24	-241	-418	25.9													MUN, 74	3-1952
3-1952-19 KALIBI PUMP STA	13 BONOLULU BMS	1926	PRINGER	211953	1575227		12	414	23	-248	-391	26.0													MUN, 74	3-1952
3-1952-20 KAPALAMA BATTERY	13 CASTLE & COOKE	1927	MCCANDLESS	211917	1575219		10	540	5	-480	-535														IND, 74	3-1952
3-1952-21 KAPALAMA BATTERY	13 CASTLE & COOKE	1927	MCCANDLESS	211917	1575221		10	612	4	-482	-608														IND, 74	3-1952
3-1952-22 KALIBI PUMP STA	13 BONOLULU BMS	1927	PRINGER	211953	1575227		12	360	24	-227	-336	25.9													MUN, 74	3-1952
3-1952-23 KAPALAMA	13 BON GAS PROD	1939	MULLIN	211916	1575212		8	108	4	-48	-96	1.5				1380	110								OTR, 74	3-1952
3-1952-24 KAPALAMA	13 BON GAS	1947	MULLIN	211910	1575228		16	80								13000	2000	5.0	400	16400					SLD, 89	3-1952
3-1952-25 KAPALAMA	13 BON GAS	1947	MULLIN	211911	1575228		16	81								16200	1500	3.2	469	17400					LOS, 81	3-1952
3-1952-26 KAPALAMA BATT	13 DEL MONTE CORP	1950	MULLIN	211910	1575220		18	36																	IND, 74	3-1952
3-1952-27 KAPALAMA BATT	13 DEL MONTE CORP	1950	MULLIN	211910	1575220		18	35																	IND, 74	3-1952

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						LAT	LONG	TYPE	CSG	TOTAL	GRND SURF	BOTT SOLID	BOTT PERF	BOTT OF	STAT HEAD	CHLOR MG/L	PUMP RATE	DRAN DOWN	SPEC CAP	CHLOR MG/L	WATR TEMP C	PUMP CAPAC MGD	DRAFT MGD, YR		--CHLORIDES-- MG/L, YEAR MAX MIN
3-1952-28	KAPALANA BATT	13	DEL MONTE CORP	1950	MULLIN	211910	1575220		18	35													IND, 74	3-1952-28	
3-1952-29	KAPALANA BATTERY	13	CASTLE & COOKE	1951	SAMSON-SMOCK	211908	1575225		14	40												SLD, 88	3-1952-29		
3-1952-30	KAPALANA	13	BON GAS	1951	NAT WHITON	211912	1575228		16	75	7	-44			12600	810	3.0	270				SLD, 89	3-1952-30		
3-1952-31	KAPALANA BATTERY	13	CASTLE & COOKE	1954	SAMSON-SMOCK	211907	1575221		14	42												IND, 74	3-1952-31		
3-1952-32	KAPALANA BATTERY	13	CASTLE & COOKE	1957	SAMSON-SMOCK	211906	1575222		14	40					17000	750	1.5	500				IND, 74	3-1952-32		
3-1952-33	KAPALANA BATTERY	13	CASTLE & COOKE	1957	SAMSON-SMOCK	211908	1575222		14	40					18500	630	5.0	126				SLD, 88	3-1952-33		
3-1952-34	KAPALANA	13	BISHOP ESTATE	1959	NAT WHITON	211934	1575255		12	85	15	-45		-70	4.0	750	31.4	24	18850			LOS, 81	3-1952-34		
3-1952-35	KAPALANA	13	BISHOP ESTATE	1960	SAMSON-SMOCK	211933	1575254		16	250	15	-5	-190	-235	12.9	11600				4672.00		UNU, 74	3-1952-35		
3-1952-36	KAPALANA	13	BISHOP ESTATE	1967	NAT WHITON	211933	1575254		16	80	15	-31		-65	0.3	11311	525	27.0	19	16500	26.7	LOS, 81	3-1952-36		
3-1952-37	KAPALANA	13	UNION OIL CO	1972	CONTL DRLG CO	211901	1575217		6	109												UNU, 74	3-1952-37		
3-1952-38	KAPALANA	13	BISHOP ESTATE	1900		211942	1575257		10	603	15	-477		-588	25.6	124	12					270,	55,	UNU, 81	3-1952-38
3-1952-39	BCC AQUA CLTR A	13	BON COMM COLL	1983	FRED PAGE	211932	1575222	PER 18	35	9				-26					0.06	0.1, 82		SLD, 91		3-1952-39	
3-1952-40	BCC P-1	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 6	34	9	-1	-25		-25								OTH, 87		3-1952-40	
3-1952-41	BCC O-1	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 2	39	9	4	-30		-30								OTH, 87		3-1952-41	
3-1952-42	BCC O-2	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 2	39	9	4	-30		-30								OTH, 87		3-1952-42	
3-1952-43	BCC O-3	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 2	39	9	4	-30		-30								OTH, 87		3-1952-43	
3-1952-44	BCC O-4	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 2	39	9	4	-30		-30								OTH, 87		3-1952-44	
3-1952-45	BCC O-5	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 2	39	9	4	-30		-30								OTH, 87		3-1952-45	
3-1952-46	BCC O-6	13	BON COMM COLL	1987	WALTER LUM	211932	1575222	ROT 1	31	9				-22								OTH, 87		3-1952-46	
3-1953-01	OAHU PRISON	13	STATE OF HAW	1915	MCCANDLESS	211958	1575313	12	666	17	-547		-649									SLD, 76		3-1953-01	
3-1953-02	SALT WATER WELL	13	STATE DAGS	1976	CONTL DRLG CO	211911	1575340	4	100	8	-92		-92	7.5		275	7.0	39						3-1953-02	
3-1959-01	PULUOA	10	U S NAVY	1939	MULLIN	211956	1575956	6	30	15	-5		-15		1160							UNU, 74		3-1959-01	
3-1959-02	PULUOA	10	U S NAVY	1939	MULLIN	211953	1575950	6	30	15	-5		-15		1110							UNU, 74		3-1959-02	
3-1959-03	PULUOA	10	U S NAVY	1940	NAT WHITON	211959	1575941	6	25						990	50						UNU, 74		3-1959-03	
3-1959-04	PULUOA	10	U S NAVY	1941	MULLIN	211947	1575956	6	60						1010							UNU, 74		3-1959-04	
3-1959-05	FT WEAVER RD	10	H I G	1966	LAYNE INT	211907	1575947	10	1111	6	-284		-1105	5.3	17600							OTH, 74		3-1959-05	
3-1959-06	FT WEAVER RD	10	H I G	1966	LAYNE INT	211906	1575948	3	290	6	-284		-284									OTH, 74		3-1959-06	
3-1959-07	FT WEAVER RD	10	MOAA	1972	CONTINENTAL	211907	1575946	4	106	6	-99		-100									OTH, 74		3-1959-07	
3-2000-01	BONOLIULI EP 21	10	OAHU SUGAR	1930		212003	1580044	DUG 12	30	25			-5	1.9	825				0.7, 76	937,	470,	IRR, 74		3-2000-01	
3-2000-02	BONOLIULI	10	U S NAVY	1939	MULLIN	212006	1580003	6	30	15	-5		-15		1040							UNU, 74		3-2000-02	
3-2000-03	BONOLIULI	10	HAW KEAT CO	1957	SAMSON-SMOCK	212012	1580018	12	50	20	-10	-30	-30	1.5	531	1000	4.0	250	575			IRR, 74		3-2000-03	
3-2000-04	BONOLIULI	10	HAW KEAT CO	1957	SAMSON-SMOCK	212018	1580014	12	55	20	-10	-30	-35	3.0	609	1000	4.0	250	618			IRR, 74		3-2000-04	
3-2000-05	BONOLIULI	10	HAW KEAT CO	1957	SAMSON-SMOCK	212015	1580022	12	63	20	-10	-30	-43	2.0	532	1000	4.0	250	586			IRR, 74		3-2000-05	
3-2001-01	BONOLIULI EP 23	10	OAHU SUGAR	1931		212054	1580109	DUG 12	47	43			-4	1.7								IRR, 74		3-2001-01	
3-2001-02	EWA	06	GENTRY PACIFIC	1987	ROSCOE MOSS	212038	1580152	PER 8	38	28	-1	-10	-10	1.6		200			325	0.29		IRR, 87		3-2001-02	
3-2001-06	PALM VILLA 1	06	GENTRY-PACIFIC	1990	ROSCOE MOSS	212051	1580153	PER 12	60	41	1	-19	-19	1.0		500	5.5	91	600			IRR, 00		3-2001-06	
3-2001-07	ARBORS GV-1	06	GENTRY-PACIFIC	1991	ROSCOE MOSS	212034	1580149	PER 12	50	34	6	-14	-16	1.9	690	500	6.1	82	750			IRR, 00		3-2001-07	
3-2001-08	PALM VILLA 2	06	GENTRY-PACIFIC	1991	ROSCOE MOSS	212030	1580158	PER 12	60	35	-5	-25	-25	1.9	690	540	6.1	89	750			IRR, 00		3-2001-08	
3-2002-01	EWA	06	EWA PLANTN	1891	MCCANDLESS	212032	1580222	12	507	47		-372		-460	417					792,	417,	SLD, 66		3-2002-01	
3-2002-02	EWA	06	EWA PLANTN	1891	MCCANDLESS	212032	1580222	8	523	46		-404		-477								SLD, 46		3-2002-02	
3-2002-03	EWA	06	EWA PLANTN	1899	MCCANDLESS	212032	1580222	10	551	46		-392		-505	16.6	1184				2100,	1030,	SLD, 46		3-2002-03	
3-2002-04	EWA	06	EWA PLANTN	1899	MCCANDLESS	212032	1580222	12	550	46		-404		-504		454				1400,	454,	SLD, 46		3-2002-04	
3-2002-05	EWA	06	EWA PLANTN	1900	MCCANDLESS	212032	1580222	10	522	46		-404		-476		385				537,	385,	SLD, 46		3-2002-05	
3-2002-06	EWA	06	EWA PLANTN	1900	MCCANDLESS	212032	1580222	10	518	46		-399		-472		385				1790,	385,	SLD, 46		3-2002-06	
3-2002-07	EWA	06	EWA PLANTN	1908	MCCANDLESS	212032	1580222	12	498	46				-452		585				1777,	560,	SLD, 42		3-2002-07	

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							TYPE	CSG	TOTAL	GRND	BOTT	BOTT	BOTT	STAT	CHLOR	PUMP	DNAM	SPEC	CHLOR	WATR	PUMP	DRAFT	--CHLORIDES--	MAJOR		
								CONS	DIA	DEPTH	SURF	SOLID	PERF	OF	HEAD	MG/L	RATE	DOWN	CAP	MG/L	TEMP	CAPAC	MGD, YR	MG/L, YEAR	USE, YR	
								IN	FT					FT			GPM	FT			MGD		MAX	MIN		
3-2044-02	OLONA GOLF	15	STATE OF HAW	1937	MULLIN	212043 1574452		6	270	150	-88			-120												3-2044-02
3-2044-03	WAINANALO TUN 1	15	BONOLULU BWS	1888	WAINANALO SUG	212007 1574444	TUN			415															3-2044-03	
3-2044-04	WAINANALO TUN 2	15	BONOLULU BWS	1926	WAINANALO SUG	212012 1574455	TUN			425												0.4, 69	23, 77	21, 77	3-2044-04	
3-2045-01	MAUNAWILI FAULT	15	STATE DOWALO	1900	WAINANALO PLM	212046 1574554	TUN			450															3-2045-01	
3-2045-02	MAUNAWILI KOREAN	15	STATE DOWALO	1923	WAINANALO PLM	212039 1574541	TUN			535												0.4, 35			3-2045-02	
																						0.2, 35			3-2045-03	
3-2045-03	WAINANALO TUN 3	15	BONOLULU BWS		WAINANALO SUG	212014 1574501	TUN			462															3-2045-03	
3-2045-04	WAINANALO C&C	15	BONOLULU BWS			212013 1574500	TUN			462															3-2045-04	
3-2045-05	WAINANALO TUN 4	15	BONOLULU BWS	1941		212011 1574512	TUN			620												0.2, 69	17, 77		3-2045-05	
3-2045-06	ROYAL BAMN C C 6	15	MAUNAWILI-RECC	1989	P R DRILLING	212057 1574552	PER 5	522		350	287			-172	303.0		26	171.2	0			0.4, 69	17, 77		3-2045-06	
3-2046-01	MAUNAWILI	13	BONOLULU BWS	1954	SAMSON-SMOCK	212048 1574650	1	805		777	-7	-28	-28	635.9											3-2046-01	
3-2046-02	MAUNAWILI	13	BONOLULU BWS	1954	SAMSON-SMOCK	212034 1574653	1	1036		1008	14	-7	-28	667.8											3-2046-02	
3-2046-03	MAUNAWILI CLARK	13	STATE DOWALO	1926	WAINANALO PLM	212050 1574633	TUN			550															3-2046-03	
3-2047-01	MAUNAWILI	13	BONOLULU BWS	1953	NAT WHITON	212047 1574714	2	452		1272	1212			820	1012.6							0.6, 35			3-2047-01	
3-2047-02	MAUNAWILI	13	BONOLULU BWS	1954	NAT WHITON	212047 1574714	1	1230		1272	152			42	685.3										3-2047-02	
3-2047-03	MANOA	13	BONOLULU BWS	1968	CONTINENTAL	212007 1574744	2	75		549	487	482	474												3-2047-03	
3-2047-04	MANOA	13	BONOLULU BWS	1968	CONTINENTAL	212008 1574747	2	155		526	399			371	540.9	15									3-2047-04	
3-2047-05	MANOA	13	BONOLULU BWS	1970	ROSCOE MOSS	212008 1574747	PER 16	537		528	390			-9		14	600	20.7	29		21.0				3-2047-05	
3-2052-01	KALIBI	13	HILLS W J	1883		212000 1575256		7	503	29	-319			-474	29.4										3-2052-01	
3-2052-02	KALIBI	13	BONOLULU CTY	1888		212009 1575258	8	600		41				-559	32.2	81									3-2052-02	
3-2052-03	KAJAKAMULO	13	CHINESE TWCA	1894		212002 1575218	8	210		29	-118			-181	31.2	114									3-2052-03	
3-2052-04	BISHOP MUSEUM	13	BISHOP ESTATE	1895	MCCANDLESS	212002 1575224	8	346		28				-318	28.7	86									3-2052-04	
3-2052-05	M. KING ST	13	WINSTON E C	1905	MCCANDLESS	212008 1575253	10	500		40	-418			-460	30.9	134									3-2052-05	
3-2052-06	KAPALAMA AVE	13	STATE OF HAW	1910	MCCANDLESS	212004 1575224	12	351		43	-189			-308	28.8	65									3-2052-06	
3-2052-07	KAMEHAMEHA SCH 1	13	KAMEHAMEHA SCH	1927	MCCANDLESS	212016 1575212	12	321		80	-38			-241	26.0	84									3-2052-07	
3-2052-08	KALIBI SHAFT	13	BONOLULU BWS	1937		212052 1575236	99	154		160				6	29.6	73	4.2				0.86	0.2, 76	190, 73, 50,		3-2052-08	
3-2052-09	FT SHAFTER	13	U S ARMY	1942	MULLIN	212058 1575250	12	235		202	-8			-33	25.0										3-2052-09	
3-2052-10	KAPALAMA	13	BONOLULU BWS	1959	SAMSON-SMOCK	212015 1575215	8	283		80	-153			-203	24.2										3-2052-10	
3-2052-11	KAMEHAMEHA SCH 2	13	KAMEHAMEHA SCH	1977	NAT RES INTL	212017 1575211	NOT 12	334		90	-39			-244		50	850	4.8	177	75	0.86				3-2052-11	
3-2052-12	JOHNATHAN SPRINGS	13	BONOLULU BWS	1981	ROSCOE MOSS	212002 1575208	PER 14	151		31	-19			-120	21.9		1165	1.2	971	120	22.2				3-2052-12	
3-2053-01	FT SHAFTER	13	GULICK C J	1883	MCCANDLESS	212038 1575318	8	331		12				-319		72									3-2053-01	
3-2053-02	FT SHAFTER	13	STATE OF HAW	1885		212050 1575343	6	427		10	-228			-417	27.4	60									3-2053-02	
3-2053-03	KALIBI	13	YAMANA U	1886	MCCANDLESS	212018 1575305	6	645		27	-493			-618	28.5	89									3-2053-03	
3-2053-04	FT SHAFTER	13	U S ARMY	1889		212045 1575314	6	212		20	-147			-192	26.4	68									3-2053-04	
3-2053-05	KALIBI	13	AMERON BC&D	1894	MCCANDLESS	212022 1575317	6	471		20	-327			-451	30.0	96									3-2053-05	
3-2053-06	FT SHAFTER	13	STATE OF HAW	1895		212048 1575339	8	330		8	-228			-322	27.2	65					0.58	0.1, 80	260, 70, 65,	214, 80	3-2053-06	
3-2053-07	FT SHAFTER	13	U S ARMY	1898	MCCANDLESS	212053 1575320	8	248		39				-209											3-2053-07	
3-2053-08	KALIBI	13	FRANK F FASI	1903	MCCANDLESS	212010 1575315	10	670		7	-500			-663	28.0	109									3-2053-08	
3-2053-09	KALIBI	13	HAW MEAT CO	1905		212018 1575320	8	607		22	-427			-585	28.0	89									3-2053-09	
3-2053-10	FT SHAFTER	13	U S ARMY	1914	MCCANDLESS	212046 1575314	12	279		20	-149			-259	28.0	82									3-2053-10	
3-2053-11	FT SHAFTER	13	U S ARMY	1960	NAT WHITON	212045 1575314	12	330		21	-154			-309			800	3.6	222	64	20.8				3-2053-11	
3-2053-12	KALIBI	13	GASIMO	1967	LAYNE INT	212007 1575326	NOT 6	789		6	-582			-783	21.3	2712	150								3-2053-12	
3-2054-01	PULUOA RD	10	DAMON ESTATE	1898	MCCANDLESS	212021 1575418	10	824		19	-673			-805											3-2054-01	
3-2054-02	PULUOA RD	10	ALEX YOUNG CO	1959	PACIFIC DRUG	212014 1575413	6	677		6	-610			-671		188									3-2054-02	
3-2054-03	PULUOA RD	10	YOUNG LAUNDRY	1965	LAYNE INT	212013 1575413	ROT 8	668		6	-591			-662											3-2054-03	
3-2055-01	NIMITZ HWY	10	DAMON ESTATE			212023 1575508	6	795		20	-497			-775	19.3	152									3-2055-01	

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							TYPE	CSG	TOTAL	GRND	BOTT	BOTT	BOTT	STAT	CHLOR	PUMP	DRAM	SPEC	CHLOR	MATR	PUMP	DRAFT	--CHLORIDES--	MAJOR		
							CONS	DIA	DEPTH	SURF	SOLID	PERF	OF	HEAD	MG/L	RATE	DOWN	CAP	MG/L	TEMP	CAPAC	MGD, YR	MG/L, YEAR	USE, YR		
							IN	FT	FT		CASE	CASE	BOLE	FT		GPM	FT			C	MGD		MAX	MIN		
3-2153-07	MOANALUA	13 U	S ARMY	1945	U S ARMY	212117 1575346	16	302	28	-24			-274	21.2	52	2110	7.7	274				0.6,	76,	62,	DOM, 74	3-2153-07
3-2153-08	MOANALUA	13 U	S ARMY	1945	U S ARMY	212117 1575346	16	306	28	-29			-278	21.4	60	2460	1.5	1640					69,	58,	UNU, 74	3-2153-08
3-2153-09	MOANALUA	13	HONOLULU BWS	1945	MULLIN	212127 1575320	12	115	58	-8			-57												OBS, 74	3-2153-09
3-2153-10	MOANALUA WELLS	1 13	HONOLULU BWS	1973	WAT RES INTL	212120 1575355	NOT 16	300	36	-114			-264			2490	10.9	228	109		2.02	2.4, 76			MUM, 00	3-2153-10
3-2153-11	MOANALUA WELLS	2 13	HONOLULU BWS	1973	WAT RES INTL	212120 1575354	NOT 16	300	35	-115			-265	18.6		2500	33.5	75	335		2.02				MUM, 00	3-2153-11
3-2153-12	MOANALUA WELLS	3 13	HONOLULU BWS	1974	WAT RES INTL	212119 1575354	NOT 16	335	35	-150			-300	18.4		2777	1.8	1543			2.02				MUM, 00	3-2153-12
3-2154-01	SALT LAKE	10	BON INT CC	1909	MCCANDLESS	212126 1575415	10	294	14	-89			-280	24.6	67						0.45	0.0, 76	85,	64,	OTR, 81	3-2154-01
3-2155-01	MAKALAPA	10	OAHU SUGAR			212134 1575558	12	740	21	-479			-719	23.3	499										SLD, 39	3-2155-01
3-2155-02	MAKALAPA	10	U S NAVY			212138 1575555	12	800	22	-409			-778	23.6	270										SLD, 00	3-2155-02
3-2155-03	MAKALAPA	10	U S NAVY			212142 1575554	12	930	23	-463			-907		1250										SLD, 39	3-2155-03
3-2155-04	MAKALAPA	10	U S ARMY	1941	MULLIN	212155 1575510	12	288	91	-57			-197	23.2	82						0.1, 76	139,	82,		SLD, 77	3-2155-04
3-2155-05	MAKALAPA	10	AIZA DAIRY	1948	MULLIN	212134 1575553	8	682	62	-437			-620	20.5	242										SLD, 68	3-2155-05
3-2156-01	MAKALAPA	10	OAHU SUGAR			212127 1575605	12	608	25	-495			-583	21.7	104										SLD, 39	3-2156-01
3-2156-02	MAKALAPA	10	OAHU SUGAR			212130 1575602	12	730	33	-488			-697	23.0	243										SLD, 39	3-2156-02
3-2156-03	MAKALAPA	10	U S NAVY			212142 1575612	12	623	10	-465			-613	19.9	405										SLD, 39	3-2156-03
3-2156-04	MAKALAPA	10	U S NAVY	1941	U S NAVY	212158 1575621	6	186	8				-178	1.0											UNU, 74	3-2156-04
3-2157-01	PEARL HARBOR	10	U S NAVY			212117 1575719	4	683	19	-610			-664	23.9	385										SLD, 55	3-2157-01
3-2157-02	PEARL HARBOR	10	U S NAVY			212117 1575735	12	646	18	-541			-628	23.7	395						22.3				IND, 74	3-2157-02
3-2157-03	PEARL HARBOR	10	U S NAVY			212158 1575754	12	441	20	-333			-421												SLD, 41	3-2157-03
3-2157-04	PEARL HARBOR	10	U S NAVY	1938	U S NAVY	212121 1575731	3	192	87	47			-105	101.8	18619						24.4				UNU, 74	3-2157-04
3-2158-01	WAIPIO PENINSULA	10				212131 1575832	12	109	15				-94	22.2	1150										UNU, 74	3-2158-01
3-2158-02	WAIPIO PENINSULA	10	U S NAVY			212130 1575832	12	629	14	-499			-615	18.2	1610										SLD, 60	3-2158-02
3-2200-01	WAIPIO PENINSULA	09	U S NAVY			212232 1580015			20						2000										UNU, 74	3-2200-01
3-2200-02	WAIPIO PENINSULA	09	U S NAVY			212235 1580018			20						2000										UNU, 74	3-2200-02
3-2200-03	WAIPIO PENINSULA	09	U S NAVY			212236 1580020	2	362	11	-341	-351	-351	18.4	1930							23.0				OBS, 74	3-2200-03
3-2200-04	LAULAUHUI	10	U S NAVY	1928	BOBART	212201 1580058	2	233						21.5	385										OTR, 74	3-2200-04
3-2201-01	PEARL HARBOR	09	FOSTER M			212247 1580116	12	175	20	-92			-155	20.2	135										SLD, 66	3-2201-01
3-2201-02	BONOLIULI	06	TAKIGUCHI T			212216 1580153	10	356	17	-60			-339	16.4	340										DOM, 74	3-2201-02
3-2201-03	BONOLIULI BAT A	05	EWA PLANTN	1891	MCCANDLESS	212234 1580153	10	230	40	-10			-190	16.6	304						3.0, 76				IRR, 74	3-2201-03
3-2201-04	BONOLIULI BAT B	05	EWA PLANTN	1891	MCCANDLESS	212234 1580153	10	226	40	-10			-186	16.6	304										IRR, 74	3-2201-04
3-2201-05	PEARL HARBOR	09	B MAU & ASSN	1892	MCCANDLESS	212258 1580103	10	170	11	-87			-159	20.0	204										SLD, 61	3-2201-05
3-2201-06	WAIPIAU	09	ROBINSON EST	1893	MCCANDLESS	212258 1580127	10	436	25	-375			-411	23.7	360										SLD, 65	3-2201-06
3-2201-07	BONOLIULI BAT C	05	EWA PLANTN	1921	MCCANDLESS	212234 1580153	12	282	40	-22			-242	16.6	304										IRR, 74	3-2201-07
3-2201-08	PEARL HARBOR B	09	B MAU & ASSN	1923	MCCANDLESS	212258 1580103	12	154	12	-48			-142	20.0	204										SLD, 61	3-2201-08
3-2201-09	WAIPIAU	05	HONOLULU BWS	1945	MULLIN	212245 1580158	12	107	83	-3			-24	18.5	203										SLD, 49	3-2201-09
3-2201-10	WAIPIAU	05	HONOLULU BWS	1949	MULLIN	212250 1580158	12	113	84	-8			-29	20.3	166										OBS, 74	3-2201-10
3-2201-11	PEARL HARBOR	10	ASATO H	1954	NAT WHITON	212224 1580124	2	175	4	-110			-171	17.5	244						0.07	0.1,	170,	166,	DOM, 74	3-2201-11
3-2201-12	WAIPIAU	05	GORA G	1955	NAT WHITON	212247 1580140	8	145	32	-32			-113	25.6	195	125	3.3	38							SLD, 66	3-2201-12
3-2201-13	PEARL HARBOR	10	NAKATA D	1959	PACIFIC DRIG	212225 1580125	4	200	5	-55			-195	18.6	164						0.10	0.1,	173,	147,	DOM, 74	3-2201-13
3-2201-14	PEARL HARBOR	09	BARRIS RUG CL	1969	ROSCOE MOSS	212245 1580117	PER 8	185	18	-96			-167	20.0	94	236	5.1	46			21.7	0.43	0.0, 76		IND, 74	3-2201-14
3-2202-01	BONOLIULI	06	AKANA L		MCCANDLESS	212224 1580201	10	500	23				-477	18.4	280										IRR, 74	3-2202-01
3-2202-02	BONOLIULI	06	DUNLAP B		MCCANDLESS	212212 1580200	8	395	16	-80			-379	21.3	183										DOM, 74	3-2202-02
3-2202-03	BONOLIULI P546A	06	EWA PLANTN	1896		212220 1580218	12	304	50	-20			-254	22.1	213						14.3, 76				IRR, 74	3-2202-03
3-2202-04	BONOLIULI P546B	06	EWA PLANTN	1896		212220 1580218	12	305	50	-20			-255	22.1	213										IRR, 74	3-2202-04
3-2202-05	BONOLIULI P546C	06	EWA PLANTN	1896		212220 1580218	12	310	50	-20			-260	22.1	213										IRR, 74	3-2202-05

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						LAT	LONG	TYPE	CSG	TOTAL	GRND SURF	BOTT SOLID	BOTT PERF	BOTT OF	STAT HEAD	CHLOR MG/L	PUMP RATE	DRAW DOWN	SPEC CAP	CHLOR MG/L	WATER TEMP C	PUMP CAPAC	DRAFT MGD, YR	--CHLORIDES--		
								CONC	DIA	DEPTH																
								IN		FT																
3-1750-03	MCCULLY	13	DIAMOND BARY	1890		211756	1575010	8	374		10	-330	-364	28.2	58											
3-1750-04	WAIKIKI	13	NIUMALU HOTEL	1950	SAMSON-SMOCK	211706	1575024	10	62							230	1.0	230								
3-1750-05	MCCULLY	13	TIMES MARKET	1953	NAT WHITON	211758	1575009	8	154							50	8.0	6								
3-1750-06	WAIKIKI	13	BILTON HOTEL	1955	SAMSON-SMOCK	211709	1575020	8	122																	
3-1750-07	WAIKIKI	13	BILTON HOTEL	1955	SAMSON-SMOCK	211713	1575022	8	120																	
3-1750-08	WAIKIKI	13	BILTON HOTEL	1955	SAMSON-SMOCK	211713	1575022	8	90																	
3-1750-09	ALA MOANA	13	PAGODA HOTEL	1964	NAT WHITON	211757	1575036	16	53		7	-14	-46			550	2.9	190								
3-1750-10	ALA MOANA	13	ALA MOANA CTR	1967	NAT WHITON	211733	1575041	18	88		4	-38	-84	2.8	13954	600	0.8	750								
3-1750-11	ALA MOANA	13	ALA MOANA CTR	1967	NAT WHITON	211734	1575042	18	55		5	-32	-50	2.9	13451	550	0.5	1100	17680							
3-1751-01	ALA MOANA	13	CASTLE & COOKE	1939	NAT WHITON	211751	1575142	12	142						16100					1.01						
3-1751-02	ALA MOANA	13	CASTLE & COOKE	1949	MULLIN	211751	1575142	12	150						15700					2.02						
3-1751-03	ALA MOANA	13	STATE OF HAW	1959	SAMSON-SMOCK	211742	1575138	6	92						18000											
3-1751-04	ALA MOANA	13	1350ALA MOANA	1967	NAT WHITON	211740	1575103				5															
3-1751-05	ALA MOANA	13	U OF HAWAII	1968	NAT WHITON	211740	1575130									600			17070							
3-1751-06	ALA MOANA	13	U OF HAWAII	1970	ROSCOE MOSS	211740	1575149	PER 16	151		5	-41	-146			179	8.0	22								
3-1800-01	EWA BEACH	10	N O A A	1972	CONTINENTAL	211858	1580020	4	106																	
3-1805-01	BARBERS POINT	06	CAMPBELL EST	1957	SAMSON-SMOCK	211859	1580527	7	50		22	20	-28	1.1	932	375	1.0	375	958							
3-1805-02	BARBERS POINT	06	OCEAN MINERALS	1978	ROSCOE MOSS	211837	1580526	PER 20	100		18	-2	-22			3000	2.0	1500								
3-1805-03	BIRI FIREWELL	06	HAWN IND REFIN	1985	FOUND INTL	211819	1580525	ROT 20	50		10	-9	-40		2700	2800	3.0	933		0.00						
3-1806-01	BARBERS POINT	06	CAMPBELL EST	1957	SAMSON-SMOCK	211809	1580617	7	50		9	6	-41	0.8	4630											
3-1806-02	BARBERS POINT	06	CHEVRON USA	1957	SAMSON-SMOCK	211858	1580656	7	50		7	5	-43	0.8	7160											
3-1806-03	BARBERS POINT	06	BAW WESTRN ST	1959	SAMSON-SMOCK	211820	1580628	16	100		12	-12	-36	0.5	9050	1100	2.5	440		1.58						
3-1806-04	BARBERS POINT	06	BAW WESTRN ST	1959	SAMSON-SMOCK	211820	1580628	16	50		12	9	-38		3020	1000	1.7	588		1.44						
3-1806-05	BARBERS POINT	06	30 PIPELACSG	1959	SAMSON-SMOCK	211836	1580624	8	40		12	-4	-28													
3-1806-06	BARBERS POINT	06	CHEVRON USA	1959	NAT WHITON	211833	1580650	18	50		7		-43	1.0	13600	1500	4.0	375	14300	2.74						
3-1806-07	BARBERS POINT	06	DILL-COMOCO	1972	CONTINENTAL	211820	1580642	6	300		9	-207	-291			385	2.0	193								
3-1806-08	BARBERS POINT	06	DILL-COMOCO	1972	CONTINENTAL	211820	1580642		215		12		-88	-91	0.3											
3-1806-09	BARBERS POINT	06	C&C B-POWER	1986	ROSCOE MOSS	211830	1580629	PER 18	103		12	-38	-88	0.2		3000	1.8	1467		0.00						
3-1806-10	BARBERS POINT	06	C&C B-POWER	1986	ROSCOE MOSS	211830	1580629	PER 18	105		12	-38	-88	0.2		3000	5.0	600		0.00						
3-1806-11	AES PRCD #1	06	AES INC	1989	ROSCOE MOSS	211824	1580630	PER 20	115		12	-48	-103	-103		4500	19.0	237								
3-1806-12	AES 1B	06	AES INC	1990	ROSCOE MOSS	211822	1580632	PER 20	124		13	-24	-109	-111	0.6		3000	2.4	1250							
3-1806-13	AES 1C	06	AES INC	1990	ROSCOE MOSS	211822	1580629	PER 20	124		11	-26	-111	-113	0.8		2000	2.9	690	28000						
3-1806-14	AES 1D	06	AES INC	1990	ROSCOE MOSS	211821	1580631	PER 20	125		13	-24	-107	-112	1.0		1000	5.1	196							
3-1840-01	KALAMA VALLEY	15	GOMES	1945	MULLIN	211808	1574040	6	116		94	27	-22	1.3	667											
3-1840-02	KALAMA VALLEY	15	RUBA Y	1945	MULLIN	211800	1574045	6	116		106	31	11	-20	2.6	785										
3-1840-03	KALAMA VALLEY	15	TAJIRI T	1946	MULLIN	211817	1574038	6	99		78	-21	-21	3.0	922											
3-1840-04	KALAMA VALLEY	15	LEONG K	1947	MULLIN	211830	1574036	7	110		88	4	-20	2.2	1080											
3-1840-05	KALAMA VALLEY	15	MAZSHIRO T	1949	NAT WHITON	211808	1574034	6	83		67	-16	-16	0.6	1190	59	1.9	31								
3-1840-06	KALAMA VALLEY	15	KACOR REALTY	1949	NAT WHITON	211805	1574036	8	101		78	-11	-23	0.6	1370	33	1.3	25								
3-1840-07	KALAMA VALLEY	15	ING P	1950	NAT WHITON	211811	1574034	6	89		75	-13	-14	0.8	1740	82	0.1	820								
3-1841-01	KAMILONUI VALLEY	15	KANESHIRO M	1956	SAMSON-SMOCK	211833	1574152	8	275		37		-238													
3-1842-01	KAMILONUI VALLEY	15	SRINDO T	1945	MULLIN	211815	1574200	6	200		35		-165	0.8	750											
3-1843-01	KULIQUOU	15	HONOLULU BWS	1983	ROSCOE MOSS	211827	1574340	PER 12	268		218	10	-30	3.7		350	2.6	135	100	21.1						
3-1845-01	MAILUPE II	15	HONOLULU BWS	1986	ROSCOE MOSS	211815	1574535	PER 12	490		380	-15	-110	7.5		300	17.0	18	25	20.3						
3-1847-01	PALOLO WELL	13	HONOLULU BWS	1974	WAT RES INTL	211837	1574729	ROT 12	570		387	-33	-183	21.9	22	1100	11.0	100	24	1.50	1.4, 76					

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							TYPE	CSG	TOTAL	GRND	BOTT	BOTT	BOTT	STAT	CHLOR	PUMP	DRAW	SPEC	CHLOR	MATR	PUMP	DRAFT	CHLORIDES	MAJOR			
							CONS	DIA	DEPTH	SURF	SOLID	PERF	OF	HEAD	MG/L	RATE	DOWN	CAP	MG/L	TEMP	CAPAC	MGD, YR	MG/L, YEAR	USE, YR			
								IN	FT		CASE	CASE	SOLE	FT		GPM	FT			C	MGD		MAX	MIN			
3-1851-03	KING ST	13	STATE OF HAW	1882		211830 1575141	5	769	14	-701			-755	30.8	55							0.1,	55,	44,	SLD, 77	3-1851-03	
3-1851-04	IOLANI PALACE	13	STATE OF HAW	1882		211838 1575140	14	752	18	-730			-734	25.2	43								54,	43,	UNU, 74	3-1851-04	
3-1851-05	ALAKA ST	13	COOPER R M	1882		211845 1575141	6	636	20				-616	26.0	48								48,	43,	SLD, 25	3-1851-05	
3-1851-06	YOUNG ST	13	VIDA VILLA	1883		211818 1575101	6	503	17	-217			-486	19.2											SLD, 27	3-1851-06	
3-1851-07	PACIFIC CLUB	13	PACIFIC CLUB	1884	ASLEY	211849 1575127	3	560	28	-470			-532	23.2	35						0.03	0.0, 76	53,	30,	DCM, 74	3-1851-07	
3-1851-08	HOTEL ST	13	B R T	1889	MCCANDLESS	211825 1575120	8	648	19	-565			-629	27.2	56							0.10	0.0, 76	56,	50,	SLD, 50	3-1851-08
3-1851-09	KAWAIBAO CR	13	KAWAIBAO CR	1893	PINKHAM	211829 1575139	4	765	14	-701			-751	26.1	52								80,	43,	SLD, 87	3-1851-09	
3-1851-10	ACAD OF ARTS	13	COFFE C M	1894	MCCANDLESS	211827 1575104	8	486	30	-392			-456	31.0											SLD, 28	3-1851-10	
3-1851-11	QUEENS BOSP	13	QUEENS BOSP	1894	MCCANDLESS	211839 1575122	8	521	24	-395			-497	27.1	49									48.00	SLD, 60	3-1851-11	
3-1851-12	BERETANIA P STA	13	BONOLULU BMS	1895	MCCANDLESS	211831 1575120	10	580	21	-478			-559	32.0								7.6, 76	67,	36,	MUN, 74	3-1851-12	
3-1851-13	BERETANIA P STA	13	BONOLULU BMS	1895	MCCANDLESS	211831 1575120	10	616	22	-477			-594										67,	36,	MUN, 74	3-1851-13	
3-1851-14	KAPIOLANI BLVD	13	BONOLULU CTY	1897	MCCANDLESS	211820 1575128	6	691	9	-641			-682	24.9	80								80,	73,	SLD, 40	3-1851-14	
3-1851-15	WARD AVE	13	BAMN ELEC CO	1898	MCCANDLESS	211815 1575120	8	734	5	-597			-729	28.3	70								70,	50,	UNU, 74	3-1851-15	
3-1851-16	CENTRAL SCHOOL	13	BONOLULU CTY	1889	MCCANDLESS	211855 1575135	6	1007	28				-979										90,		SLD, 39	3-1851-16	
3-1851-17	POHUKAIA	13	BON IRON WORKS	1900	MCCANDLESS	211817 1575154	8	1007	5	-798			-1002	27.8	98								190,	98,	SLD, 40	3-1851-17	
3-1851-18	QUEEN S	13	C Q YEE BOP	1900	MCCANDLESS	211822 1575144	8	806	8	-766			-798	27.7	89								89,	60,	UNU, 74	3-1851-18	
3-1851-19	HALAKAUNILA ST	13	BAMN ELEC CO	1900	MCCANDLESS	211832 1575155	1	1053	6	-1037			-1047	27.2	67								6120,	210,	OBS, 74	3-1851-19	
3-1851-20	BERETANIA ST	13	MTL INC	1901	MCCANDLESS	211828 1575120	8	576	19	-513			-557	31.2	75							0.1, 76	75,	35,	SLD, 90	3-1851-20	
3-1851-21	KAWAIBAO ST	13	MAGOOD ESTATE	1901	MCCANDLESS	211818 1575136	8	791	4	-610			-787	29.1	90								350.89	40,	SLD, 90	3-1851-21	
3-1851-22	ALA MOANA BLVD	13	U.S.G.S.	1901	MCCANDLESS	211828 1575158	8	1152	4	-1121			-1148	22.5	194							0.6,	7650,	113,	OBS, 82	3-1851-22	
3-1851-23	BISHOP ST	13	A YOUNG HOTEL	1901	MCCANDLESS	211843 1575148	10	960	15	-835			-945	26.5	67							0.3,	580,	16,	SLD, 71	3-1851-23	
3-1851-24	BERETANIA P STA	13	BONOLULU BMS	1910	MCCANDLESS	211831 1575120	12	616	20	-467			-596	26.9									67,	36,	MUN, 74	3-1851-24	
3-1851-25	BERETANIA P STA	13	BONOLULU BMS	1910	MCCANDLESS	211831 1575120	12	617	17	-478			-600	27.7									67,	36,	SLD, 63	3-1851-25	
3-1851-26	KAPIOLANI BLVD	13	BUS INVEST LTD	1910	MCCANDLESS	211815 1575128	8	725	6	-653			-719	27.8	95	800	6.0	133				0.1, 76	116,	40,	SLD, 90	3-1851-26	
3-1851-27	QUEEN ST	13	BAMN ELEC CO	1910	MCCANDLESS	211834 1575153	12	1145	2	-803			-1143	27.2	55								141,	55,	SLD, 63	3-1851-27	
3-1851-28	YOUNG ST	13	MED ARTS BLDG	1913	MCCANDLESS	211818 1575103	8	505	18	-458			-487	30.3	41							0.1,	63,	24,	UNU, 74	3-1851-28	
3-1851-29	ALA MOANA BLVD	13	INTERISLAND NV	1913	MCCANDLESS	211817 1575159	12	1009	7	-904			-1002	30.2	103							0.0, 76	216,	103,	SLD, 38	3-1851-29	
3-1851-30	ALAKA ST	13	BON MOSE MART	1915	MCCANDLESS	211846 1575143	10	810	18	-688			-792	28.4	44							0.1,	63,	34,	SLD, 90	3-1851-30	
3-1851-31	BERETANIA P STA	13	BONOLULU BMS	1924	MCCANDLESS	211831 1575120	12	600	20	-469			-580	28.0									67,	36,	MUN, 74	3-1851-31	
3-1851-32	BERETANIA P STA	13	BONOLULU BMS	1924	MCCANDLESS	211831 1575120	12	600	20	-469			-580	27.8									67,	36,	MUN, 74	3-1851-32	
3-1851-33	BERETANIA P STA	13	BONOLULU BMS	1926	PRIMMER	211831 1575120	12	533	14	-465			-519	23.6									67,	36,	MUN, 74	3-1851-33	
3-1851-34	BERETANIA P STA	13	BONOLULU BMS	1926	PRIMMER	211831 1575120	12	636	14	-470			-622	23.6	55								67,	36,	MUN, 74	3-1851-34	
3-1851-35	BERETANIA P STA	13	BONOLULU BMS	1926	PRIMMER	211831 1575120	12	566	15	-473			-551	23.3	47								67,	36,	MUN, 74	3-1851-35	
3-1851-36	HOTEL ST	13	BAM JUICE IND	1936	MULLIN	211824 1575117	6	700	15	-588			-685	29.0	38								38,	30,	SLD, 69	3-1851-36	
3-1851-37	MUWAMU AVE	13	CONS AMUS CO	1936	BOBART	211854 1575147	8	52	24	-16			-28	0.4		3									OTH, 74	3-1851-37	
3-1851-38	FT ST MALL	13	BREWER C & CO	1937	MULLIN	211843 1575156	6	100								130									OTH, 74	3-1851-38	
3-1851-39	HOTEL ST	13	CONS AMUS CO	1937	MULLIN	211851 1575152	6	60								50	0.8	63	181						OTH, 74	3-1851-39	
3-1851-40	FT ST MALL	13	EASY APPLIANC	1938	BOBART	211845 1575154	6	42																	OTH, 74	3-1851-40	
3-1851-41	FT ST MALL	13	FRONK & WYNN	1938	NAT WHITON	211850 1575146	6	46	21	-1	-21	-25	1.5	139	40	2.3	17	150						OTH, 74	3-1851-41		
3-1851-42	MERCHANT ST	13	WILCOX DEV	1939	NAT WHITON	211837 1575150	8	50	10	-12	-30	-40		2100	125	2.3	54								OTH, 74	3-1851-42	
3-1851-43	MERCHANT ST	13	WILCOX DEV	1939	NAT WHITON	211837 1575150	8	40	10	-7	-27	-30				125	3.1	40							DIS, 74	3-1851-43	
3-1851-44	PUNCEBOWL ST	13	MEDICAL GROUP	1939	MULLIN	211833 1575133	6	62																	SLD, 57	3-1851-44	
3-1851-45	MERCHANT & RICHARD	13		1939	MULLIN	211836 1575150	6	80							1040										OTH, 74	3-1851-45	
3-1851-46	MERCHANT & RICHARD	13		1939	MULLIN	211836 1575150	6	75																	UNU, 74	3-1851-46	
3-1851-47	RING ST	13	WALSTON & CO	1939	NAT WHITON	211841 1575152	6	41						3.7	3290	75	0.3	250						1190.00	UNU, 74	3-1851-47	

STATE OF HAWAII / DEPARTMENT OF LAND AND NATURAL RESOURCES / COMMISSION ON WATER RESOURCE MANAGEMENT
GROUND WATER INDEX AND SUMMARY
JULY 14, 1992

ISLAND CODE 3: OAHU

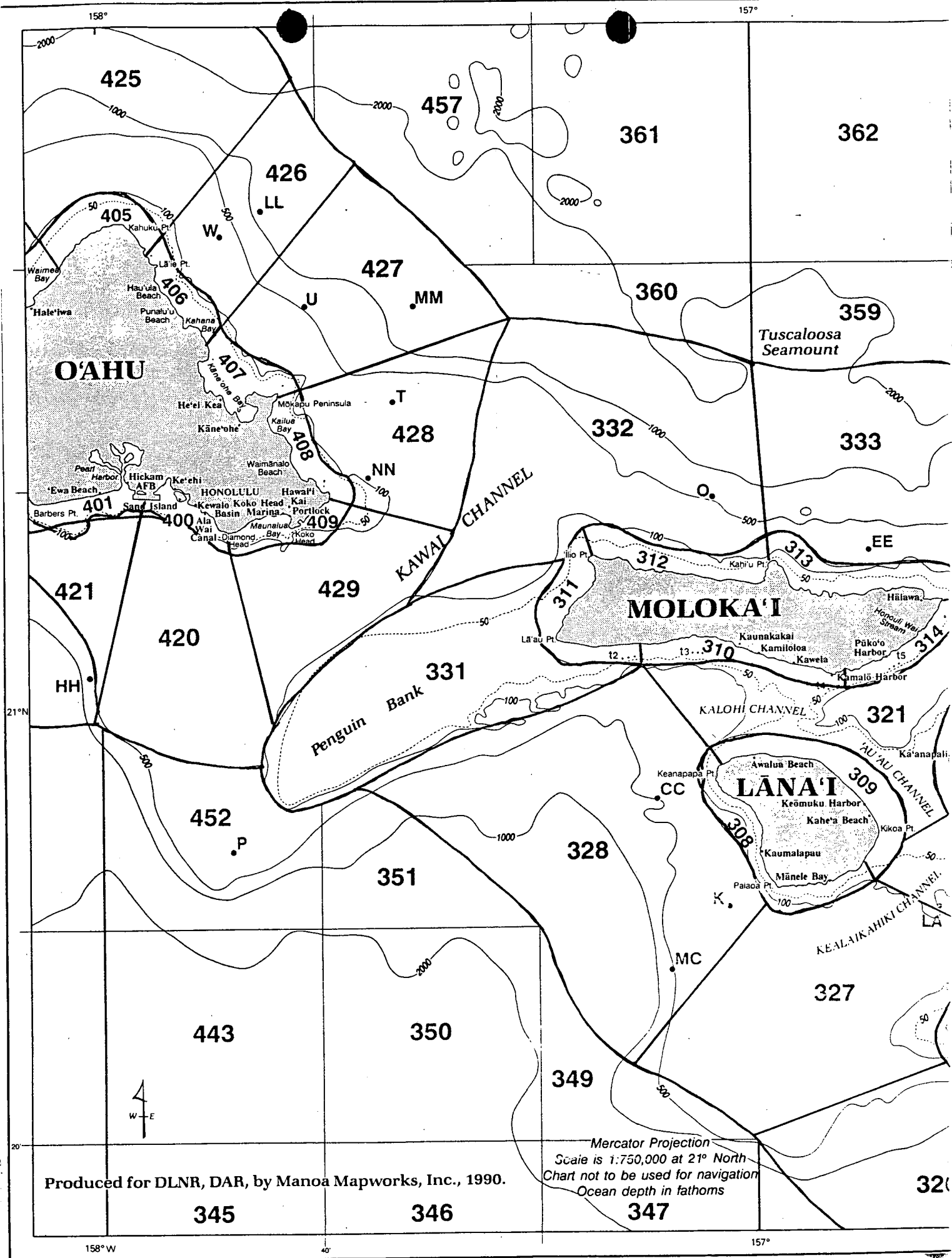
WELL NUMBER	NAME OR LOCATION	QUAD MAP	OWNER OR USER	YEAR DRLD	DRILLER	COORDINATES LAT LONG	PHYSICAL DATA		ELEVATIONS IN FEET				INITIAL TEST		PUMP TEST RESULTS					WATER SUPPLY				WELL NUMBER	
							TYPE	CSG TOTAL	GRND	BOTT	BOTT	BOTT	STAT	CHLOR	PUMP	DRAW	SPEC	CHLOR	WATR	PUMP	DRAFT	--CHLORIDES--	MAJOR		
							CONS	DIA DEPTH	SURF	SOLID	PERF	OF	HEAD	MG/L	RATE	DOWN	CAP	MG/L	TEMP	CAPAC	MGD, YR	MG/L, YEAR	USE, YR		
							IN	FT				SOLE	FT		GPM	FT			C	MGD		MAX	MIN		
3-1051-48	KING ST	13	WALSTON & CO	1939	NAT WHITON	211041 1575152	8	40					3.6	1360	75	0.3	250						UWU, 74	3-1051-48	
3-1051-49	KING ST	13	ROYAL AMUSEMENT	1940	MULLIN	211046 1575155		60															OTB, 74	3-1051-49	
3-1051-50	FT ST MALL	13	RAMSEY W A	1940	NAT WHITON	211052 1575145	3	25															OTB, 74	3-1051-50	
3-1051-51	IOLANI PALACE	13	STATE OF HAW	1952	NAT WHITON	211035 1575138	8	71	18	-6		-53	3.6	966	300	1.6	188						OTB, 74	3-1051-51	
3-1051-52	KING ST	13	BANK OF HAW	1952	SAMSON-SMOCK	211043 1575152	8	100							148	0.6	247						LOB, 74	3-1051-52	
3-1051-53	QUEEN ST	13	ALEX&BALDWIN	1956	SAMSON-SMOCK	211040 1575156	12	122	8	-14	-22	-114	0.4		400	13.1	31	19					OTB, 74	3-1051-53	
3-1051-54	QUEENS HOSP	13	QUEENS HOSP	1958	PACIFIC DRLG	211042 1575122	10	460	34	-322		-426	28.5	41						1.08	0.7, 76	65,	41,	DCM, 74	3-1051-54
3-1051-55	ALAKEA ST	13	AM MUTUAL INS	1958	NAT WHITON	211046 1575140	24	40	16	13		-24	1.0	967	250	4.0	63						OTB, 74	3-1051-55	
3-1051-56	ALAKEA ST	13	AM MUTUAL INS	1958	NAT WHITON	211046 1575140	24	30	16	13		-14	1.0		75	1.0	75						OTB, 74	3-1051-56	
3-1051-57	BMS MONITOR WELL	13	HONOLULU BMS	1960	PACIFIC DRLG	211033 1575122	6	1509	23	-427		-1486	26.9										OBS, 74	3-1051-57	
3-1051-58	KAPIOLANI BLVD	13	SHELLY MOTORS	1960	PACIFIC DRLG	211012 1575120	6	710	6	-634		-704								0.58				UWU, 84	3-1051-58
3-1051-59	KING ST	13	SPUDS LDY	1960	PACIFIC DRLG	211019 1575121	4	678	8	-599		-670	25.9	48							0.1,	52,		SLD, 76	3-1051-59
3-1051-60	WARD AVE	13	STRAUB CLINIC	1962	SAMSON-ZERBE	211019 1575112	6	180	16	-144	-164		6.0	470	115	4.0	29						OTB, 74	3-1051-60	
3-1051-61	STATE CAPITOL	13	STATE DAGS	1963	SAMSON-ZERBE	211041 1575139	16	77	20	-5	-51	-57	30.0	4030	1655	27.0	61	7500	24.4				OTB, 74	3-1051-61	
3-1051-62	NBC	13	BON AUDITORIUM	1967	NAT WHITON	211013 1575111		65	5			-60		376	600	1.9	316						OTB, 74	3-1051-62	
3-1051-63	NBC	13	BON AUDITORIUM	1967	NAT WHITON	211012 1575116			5														OTB, 74	3-1051-63	
3-1051-64	KING ST	13	BERTS SERVICE	1967	ROSCOE MOSS	211021 1575122	PER 8	91	7	-20	-28	-84			200	0.3	667						D18, 74	3-1051-64	
3-1051-65	QUEEN ST	13	KAY SERVICE	1967	ROSCOE MOSS	211021 1575141	PER 8	80	7	-5		-73	1.5		275	0.7	393	2100					D18, 74	3-1051-65	
3-1051-66	BERETANIA	13	STATE OF HAW	1967	LAYNE INT	211042 1575137	ROT 100	20				-80			1500	40.0	38						OTB, 74	3-1051-66	
3-1051-67	BERETANIA	13	HONOLULU BMS	1968	LAYNE INT	211031 1575120	ROT 20	619	18	-466		-601	3.0										OBS, 74	3-1051-67	
3-1051-68	FT ST MALL	13	AMFAC	1968	NAT WHITON	211037 1575158	24	36	7	-1		-29			440	4.5	98	16750	26.1				OTB, 74	3-1051-68	
3-1051-69	FT ST MALL	13	AMFAC	1968	NAT WHITON	211037 1575158	24	40	7	-2		-33	0.3		425	11.2	38	17300	25.6				OTB, 74	3-1051-69	
3-1051-70	FT ST MALL	13	AMFAC	1968	NAT WHITON	211037 1575158	24	30	7			-23	0.3		550	1.9	289	17800	25.6				D18, 74	3-1051-70	
3-1051-71	FT ST MALL	13	CENTER PROP	1973	ROSCOE MOSS	211041 1575159	PER 16	45	7	-3		-38			850	8.2	104						OTB, 74	3-1051-71	
3-1051-72	FT ST MLL	13	CENTER PROP	1973	ROSCOE MOSS	211041 1575159	PER 16	45	7	-3		-38			950	8.5	112						OTB, 74	3-1051-72	
3-1051-73	KAWAIAHAWO CHURCH	13	KAWAIAHAWO CH	1986	NAT RES INTL	211028 1575139	ROT 9	777	13	-696		-764	19.2		102	6.0	17						IRR, 87	3-1051-73	
3-1051-74	BERETANIA STA	13	HONOLULU BMS	1988	NAT RES INTL	211033 1575123	ROT 14	598	19	-479		-579	21.0		1400	1.9	737	66	21.5				MUM, 00	3-1051-74	
3-1051-75	BERETANIA STA	13	HONOLULU BMS	1989	NAT RES INTL	211031 1575121	ROT 14	625	18	-505		-607	22.9		1400	2.2	636	102	20.4				MUM, 00	3-1051-75	
3-1052-01	ALA MOANA BLVD	13	CBUM ROOM MKT	1937	MULLIN	211054 1575202		60															OTB, 74	3-1052-01	
3-1052-02	FT ARMSTRONG	13	STATE OF HAW	1939	MULLIN	211005 1575212	8	102						14500									UWU, 74	3-1052-02	
3-1052-03	ALA MOANA BLVD	13	CASTLE&COOKE	1947	NAT WHITON	211044 1575200	6	52							150	2.3	65						OTB, 74	3-1052-03	
3-1052-04	ALOHA TOWERS	13	CASTLE&COOKE	1947	NAT WHITON	211037 1575207	6	64							150	1.5	100						OTB, 74	3-1052-04	
3-1052-05	ALOHA TOWER	13	PODMORE J W	1951	NAT WHITON	211036 1575207	8	40							90	3.4	26						UWU, 74	3-1052-05	
3-1052-06	ALA MOANA BLVD	13	SAMN ELEC CO	1953	SAMSON-SMOCK	211033 1575200	24	94															OTB, 74	3-1052-06	
3-1052-07	IMMIGRATION STA	13	STATE OF HAW	1955	NAT WHITON	211016 1575203	10	95	8	-20		-87			600	3.1	194							3-1052-07	
3-1052-08	COAST GUARD RES	13	STATE AQUATICS	1971	NAT WHITON	211028 1575229	12		8	-92					900	2.3	391	19000					OTB, 74	3-1052-08	
3-1053-01	SAND ISLE BEACH	13	STATE OF HAW	1973	CONTL DRLG CO	211059 1575304		120																3-1053-01	
3-1900-01	ENA PLANTN EP 20	10	OAHU SUGAR	1930		211958 1580058	DUG 12	30	25			-5							2.90		600,	480,	OBS, 74	3-1900-01	
3-1900-02	ENA PLANTN EP 22	10	OAHU SUGAR	1930		211952 1580040	DUG 12	29	23			-6											OBS, 74	3-1900-02	
3-1900-03	BARBERS PT	10	U S NAVY	1939	MULLIN	211959 1580010	6	37	15	-5		-22		1000							1.8, 76	660,	520,	UWU, 74	3-1900-03
3-1900-04	BARBERS POINT	10	U S NAVY	1939	MULLIN	211954 1580002	6	37	15	-5		-22		905										UWU, 74	3-1900-04
3-1900-05	BARBERS POINT	10	U S NAVY	1941	NAT WHITON	211952 1580002	6	35						1050										UWU, 74	3-1900-05
3-1900-06	BARBERS POINT	10	U S NAVY	1941	NAT WHITON	211952 1580000	6	37						1100										UWU, 74	3-1900-06
3-1900-07	BARBERS POINT	10	U S NAVY	1941	NAT WHITON	211937 1580013	6	31								30.0								UWU, 74	3-1900-07
3-1900-08	BARBERS POINT	10	U S NAVY	1941	NAT WHITON	211942 1580000	6	28						1080										UWU, 00	3-1900-08

COMMERCIAL MARINE LANDINGS, CATCHMENT AREA BY ISLAND
STATE OF HAWAII - CALENDAR YEAR 1960

17:11

ISLE OAHU

AREA	LB. CAUGHT	LB. SOLD	VALUE (\$)
	SUM	SUM	SUM
400	10,753	9,978	22,247
401	83,834	76,150	133,165
402	29,260	28,647	59,863
403	89,735	85,527	165,409
404	46,015	39,333	98,158
405	17,396	10,533	18,649
406	11,293	10,718	25,502
407	13,760	11,145	22,841
408	11,649	10,111	18,369
409	27,381	27,076	69,456
420	74,413	65,379	147,004
421	331,976	316,109	463,898
422	195,641	188,464	439,117
423	543,053	506,609	1,047,363
424	73,716	65,937	159,907
425	105,399	101,033	205,595
426	88,979	87,306	168,904
427	220,685	214,719	413,163
428	31,831	29,304	66,660
429	27,142	25,832	90,289



DRAFT

**ECOLOGICALLY SENSITIVE WETLANDS
ON O'AHU:**

Groundwater Protection Strategy for Hawai'i

Jacquelin N. Miller
Steven S. Armann
Sonia S.C. Chan-Hui
Roseanne Sakamoto
Joanna Chiang

Technical Report No. 184

December 1989

Project Completion Report
for
Identification of Class I: Special Groundwaters
Highly Vulnerable to Contamination, O'ahu (Part 2)

Project No.: T-763

Principal Investigator: L. Stephen Lau

Project Period: 1 June 1986 to 30 November 1987

Funding Agency: Department of Health, State of Hawaii

ENVIRONMENTAL CENTER
Water Resources Research Center
University of Hawaii at Manoa
Honolulu, Hawaii 96822

Appendix A.3.1 Habitat Description of Ke'ehi Lagoon

Site: Ke'ehi Lagoon	Lat.: 21°19'10"
Island: O'ahu	Long.: 157°54'30"
Sector: Honolulu, 01	El.: 20-40 ft
System: Moanalua (04)	Approx. Area/Length: 340.7 acres

Site Description:

Ke'ehi Lagoon is located on the southern shore of the island of O'ahu, Hawaii. The lagoon is a product of planned alterations during WWII of a fringing coral reef lagoon. The lagoon today is approximately triangular in shape with the entrance to the lagoon extending east-west from Sand Island to Ahua Point (Bogost 1976).

This lagoon consists of tidal flats, shallow water, and small islands with a total area of about 450 acres on the leeward coast near the Honolulu International Airport. The area is presently used by stilts for feeding and resting. Management of the area as a sanctuary could enhance its value to stilts by preventing disturbance by people and dogs.

Ke'ehi Lagoon is a biologically very poor area in terms of species diversity and abundance of specimens. Animals characteristic of this region are, in addition to the micromolluscs, worms of various kinds living in the mud of the channels, and tubeworms living on dead coral (Harvey 1970).

Ke'ehi Lagoon is located on O'ahu's southern coastal plain, leeward of the Koolau mountain range. These leeward lowlands are characterized by abundant sunshine, the persistence of trade winds, equable day-to-day temperatures, and few severe storms.

Sensitivity Rating:	Ba12wm
Main Water Source:	B Not Groundwater
Habitat:	a Natural
Endangered Species:	1 Observed
Wetland Status:	2w Wildlife Protected
Wetland Avifauna:	m Migratory Fowl
Habitat Code:	2-1c-3-4-2-4-3-3
Water Source:	2 Other
Habitat Origin/Development:	1c Natural/Pristine + Altered
Ecological Character:	3 Endangered Species + Migratory Birds
Present Activities:	4 Recreation
Social Significance:	2 Wildlife Protected
Physical Significance:	4 Neither Sediment Trap nor Flood Control
Wetland Type:	3 Coastal
Water Quality:	3 Marine (> 15,000 mg/l Cl ⁻)
Aquifer Code:	30104116
Island:	3 O'ahu
Sector:	01 Honolulu
Aquifer System:	04 Moanalua
Aquifer Type (Hydrology):	1 Basal

Ke'ehi Lagoon--Continued

Aquifer Type (Hydrology):	1	Unconfined
Aquifer Type (Geology):	6	Sedimentary

Status Code:	23321
Development Stage:	2 Potential Use
Utility:	3 Neither Drinking nor Ecologically Important
Salinity:	3 Moderate (1,000-5,000 mg/l Cl ⁻)
Uniqueness:	2 Replaceable
Vulnerability to Contamination:	1 High

Aquifer Code:	30104121
Island:	3 O'ahu
Sector:	01 Honolulu
Aquifer System:	04 Moanalua
Aquifer Type (Hydrology):	1 Basal
Aquifer Type (Hydrology):	2 Confined
Aquifer Type (Geology):	1 Flank

Status Code:	11113
Development Stage:	1 Currently Used
Utility:	1 Drinking
Salinity:	1 Fresh (< 250 mg/l Cl ⁻)
Uniqueness:	1 Irreplaceable
Vulnerability to Contamination:	3 Low

U.S. Fish & Wildlife Service Wetland Code:

Marine/Intertidal/Unknown/Temporary Tidal/Euhaline/Tidal Irregularly Exposed (M2US2M)

Upland [Non-Wetland] (U)

Geology:

1. Alluvial sediments over limestone and coastal plain sediments

Soil Conservation Service, U.S. Dept. of Agriculture 1975:

Terrestrial Threatened or Endangered Plant(s):

No inventory available

Terrestrial Threatened or Endangered Animal(s):

Hawaiian Owl (*Asio flammeus sandwichensis*)

Hawaiian Stilt (*Himantopus mexicanus knudseni*)

Ke'ehi Lagoon--Continued

Terrestrial Plant(s):

- Sandbur (*Cenchrus echinatus* L.)
- Bermuda grass (*Cynodon dactylon* (L.) Pers.)
- Pluchea (*Pluchea x fosbergii* Coop. and Gal.)
- Mesquite (*Prosopis pallida* (Humb. and Bonpl. ex Willd.) HBK.)
- Portia tree (*Thespesia populnea* (L.) Sol.)

Aquatic Plant(s):

- Pickle-weed (*Batis maritima* L.)
- Oriental mangrove (*Bruguiera gymnorrhiza* Lam.)
- Seashore paspalum (*Paspalum vaginatum* Sw.)
- Hairy fleabane (*Pluchea odorata* (L.) Cass.)
- Red mangrove (*Rhizophora mangle* L.)
- Sea purslane (*Sesuvium portulacastrum* L.)

Terrestrial Animal(s):

- Black-crowned Night-Heron (*Nycticorax nycticorax hoactli*)
- Brown Booby (*Sula leucogaster plotus*)
- Cattle Egret (*Bubulcus ibis*)
- Common Myna (*Acridotheres tristis*)
- House Finch (*Carpodacus mexicanus*)
- House Sparrow (*Passer domesticus*)
- Japanese White-eye (*Zosterops japonicus*)
- Northern Mockingbird (*Mimus polyglottos*)
- Pomarine Jaeger (*Stercorarius pomarinus*)
- Red-crested Cardinal (*Paroaria coronata*)
- Rock Dove (*Columba livia*)
- Spotted Dove (*Streptopelia chinensis*)
- Zebra Dove (*Geopelia striata*)

Aquatic Animal(s):

- Saddle Wrasse (*Thalassoma duperrey*)
- Belted Wrasse (*Stethojulis balteata*)
- Makimaki (*Arothron hispidus*)
- 'O'opu (*Vitraria clarescens* Jordan and Evermann)
- 'O'opu 'alamo'o (*Lentipes concolor*)
- 'O'opu nakea (*Awaous stamineus*)
- 'O'opu naniha (*Awaous genivittatus*)
- 'O'opu nopili (*Sicydium stimsonii*)
- Striped Mullet (*Mugil cephalus* L.)
- Bluespine Unicornfish (*Naso unicornis*)
- White Branded Surgeon (*Acanthurus leucopareius*)
- Surgeonfish (*Acanthurus sandvicensis*)

Ke'ehi Lagoon--Continued

Hawaiian Surgeon (*Acanthurus dussumieri*)
 Lemon Butterfly (*Chaetodon miliaris*)
 Bluestripe Butterfly (*Chaetodon fremblii*)
 Rectangular Triggerfish (*Rhinecanthus rectangulus*)
 Painted Triggerfish (*Rhinecanthus aculeatus*)
 Hammerhead Shark (*Sphyrna lewini*)
 Eagle Ray (*Aetobatus narinari*)
 Brown Sting Ray (*Dasyatis hawaiiensis*)

Migratory Animal(s):

Lesser Golden-Plover (*Pluvialis dominica (fulva)*)
 Ruddy Turnstone (*Arenaria interpres*)
 Sanderling (*Calidris alba*)
 Wandering Tattler (*Heteroscelus incanus*)

Freshwater Origin:

1. Surface runoff, combined flood flow and base flow springs of basal water
2. Sediments

Comments:

27% of Kalihi Stream channel is altered and is diverted in one area. Moanalua Stream channel is altered for 35% of its length.

References:

- Bogost, M.S. 1976. Revised Environmental Impact Statement for the proposed disposal of solid waste bales in Ke'ehi Lagoon and the coastal waters of O'ahu. Prepared for Department of Public Works, City and County of Honolulu. 53 p. plus app.
- Harvey, G.W. 1970. Ke'ehi Lagoon ecological survey. Oceanic Institute, Makapu'u Ocean Center. 197 p.
- Hall, D.H. 1970. Use of agricultural chemicals and factors contributing to their transport to estuaries in Hawaii. Technical report no. 30, Water Resources Research Center, University of Hawaii, Honolulu. 44 p.
- State of Hawaii, Office of Environmental Quality Control. 1971. Report on Ke'ehi Lagoon and Waikiki Beach water quality. 30 p. plus app.
- Bathen, K.H. 1970. The circulation in Ke'ehi Lagoon, O'ahu, Hawaii, during July and August, 1968. Technical report no. 17, Hawaii Institute of Marine Biology, University of Hawaii, Honolulu. 26 p. plus maps.

Ke'ehi Lagoon--Continued

U.S. Fish and Wildlife Service. 1985. Recovery plan for the Hawaiian Waterbirds. Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 99 p.

Timbol, A.S., and Maciolek, J.A. 1978. Stream channel modification in Hawaii. Part A: Statewide inventory of streams, habitat factors and associated biota. Prepared for U.S. Fish and Wildlife Service, U.S. Department of the Interior. 157 p.

Berger, A.J. 1971. Ke'ehi Lagoon bird survey. Department of Zoology, University of Hawaii, Honolulu, Hawaii. 32 p.

Appendix A.3.3 Habitat Description of Reef Runway

Site:	Reef Runway	Lat.:	21°18'40"
Island:	O'ahu	Long.:	157°56'00"
Sector:	Honolulu, 01	El.:	20-40 ft
System:	Moanalua (04)	Approx. Area/Length:	792.0 acres

Site Description:

This is a coastal wetland which surrounds the fringe area of the reef runway.

Sensitivity Rating:	Bb2m
Main Water Source:	B Not Groundwater
Habitat:	b Artificial
Wetland Avifauna:	2m Migratory Fowl
Habitat Code:	2-2-2-5-5-4-3-3
Water Source:	2 Other
Habitat Origin/Development:	2 Artificial
Ecological Character:	2 Migratory Birds
Present Activities:	5 Neither Agriculture, Aquaculture, nor Recreation
Social Significance:	5 Neither Historic nor Wildlife Protected
Physical Significance:	4 Neither Sediment Trap nor Flood Control
Wetland Type:	3 Coastal
Water Quality:	3 Marine (> 15,000 mg/l Cl ⁻)
Aquifer Code:	30104116
Island:	3 O'ahu
Sector:	01 Honolulu
Aquifer System:	04 Moanalua
Aquifer Type (Hydrology):	1 Basal
Aquifer Type (Hydrology):	1 Unconfined
Aquifer Type (Geology):	6 Sedimentary
Status Code:	23321
Development Stage:	2 Potential Use
Utility:	3 Neither Drinking nor Ecologically Important
Salinity:	3 Moderate (1,000-5,000 mg/l Cl ⁻)
Uniqueness:	2 Replaceable
Vulnerability to Contamination:	1 High
Aquifer Code:	30104121
Island:	3 O'ahu
Sector:	01 Honolulu
Aquifer System:	04 Moanalua
Aquifer Type (Hydrology):	1 Basal

Reef Runway--Continued

Aquifer Type (Hydrology):	2	Confined
Aquifer Type (Geology):	1	Flank
Status Code:		11113
Development Stage:	1	Currently Used
Utility:	1	Drinking
Salinity:	1	Fresh (< 250 mg/l Cl ⁻)
Uniqueness:	1	Irreplaceable
Vulnerability to Contamination:	3	Low

U.S. Fish & Wildlife Service Wetland Code:
Upland [Non-Wetland] (U)

Geology:

Soil Conservation Service, U.S. Dept. of Agriculture 1975:
FL (Fill land mixed)

Terrestrial Threatened or Endangered Plant(s):
No inventory available

Terrestrial Threatened or Endangered Animal(s):
Hawaiian Stilt (*Himantopus mexicanus knudseni*)

Terrestrial Plant(s):
No inventory available

Aquatic Plant(s):
No inventory available

Terrestrial Animal(s):
No inventory available

Aquatic Animal(s):
No inventory available

Migratory Animal(s):
Lesser Golden-Plover (*Pluvialis dominica (fulva)*)

Freshwater Origin:

Comments:

Reef Runway--Continued

References:

U.S. Fish and Wildlife Service. 1985. Recovery plan for the Hawaiian Waterbirds.
Prepared for U.S. Fish and Wildlife Service, Portland, Oregon. 99 p.

ENVIRONMENTAL IMPACT
RESEARCH PROGRAM

TECHNICAL REPORT EL-89-10

SPECIES PROFILES: LIFE HISTORIES AND
ENVIRONMENTAL REQUIREMENTS OF COASTAL
VERTEBRATES AND INVERTEBRATES
PACIFIC OCEAN REGION

Report 1

GREEN TURTLE, *Chelonia mydas*

by

Robert G. Forsyth, George H. Balazs

Southwest Fisheries Center Honolulu Laboratory
National Marine Fisheries Service
National Oceanic and Atmospheric Administration
Honolulu, Hawaii 96822-2396



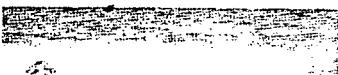
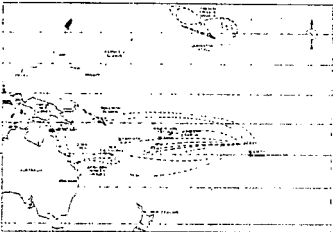
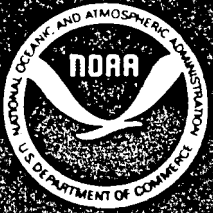
July 1989

Report 1 of a Series

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US Army Corps of Engineers
Washington, DC 20314-1000

Monitored by Environmental Laboratory
US Army Engineer Waterways Experiment Station
PO Box 631, Vicksburg, Mississippi 39181-0631



US Army Corps
of Engineers

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ENVIRONMENTAL REQUIREMENTS OF COASTAL
VERTEBRATES AND INVERTEBRATES
PACIFIC OCEAN REGION

Report 2

HUMPBACK WHALE, *MEGAPTERA NOVAEANGLIAE*

by

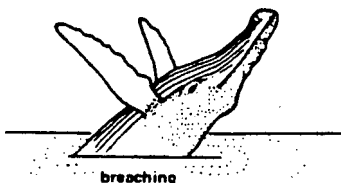
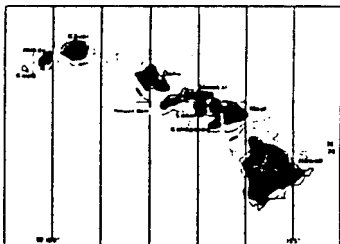
Eugene T. Nitta, John J. Naughton

Southwest Region

National Marine Fisheries Service

National Oceanic and Atmospheric Administration

Honolulu, Hawaii 96822-2396



November 1989

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US Army Corps
of Engineers

**** RCRA Notifiers List ****

Run 13.07.24 , 02/09/94

Data from the Region IX Hawaii Database.

This run used the following selection criteria (blank means all values accepted, except for facility types):

States: HI (Select 1 - 3 or all)
 Counties: (Select 1 - 4 or all)
 ZIP Codes: (Select 1 - 5 or all)
 Facility: (Select one or all)
 Leg. district: (Select one or all)
 Select only facilities that accept CERCL wastes: N

Facility types: LQG: X SQG: X CEG: X
 (X - selected) TSD: X Trans: X BBL: X REC: X

NOTE: -N- in the report indicates the facility notified for that activity but is not now engaged in that activity.

Sort: State, Name, ID (See below for sort choices)
 TC Rule facilities: (Waste codes 0010 - 0043)
 Waste codes: (Select 1 - 5 or all)
 SIC Codes: (Select 1 - 5 or all)
 Part A Process Codes:
 Owner type: (Select one or all)
 Facilities which accept wastes from offsite:
 Notification date range: from 010180 to 020994

Individual ID's selected: (1 - 15)

LQG - Large quantity generator (more than 1000 kg per month)
 SQG - Small quantity generator (100 - 1000 kg per month)
 CEG - Limited quantity generator (less than 100 kg per month)
 TSD - Treat, store, or disposal facility
 Trans - Transporter
 BBL - Burner/blender
 REC - Recycler

Sort choices

- 1 - State, Name, ID
- 2 - State, County, Name, ID
- 3 - State, ZIP, Name, ID
- 4 - State, Legislative District, ID
- 5 - Name, ID
- 6 - ID Number
- 7 - Notification date received
(most recent first)

Owner type choices

- P - Private
- F - Federal
- S - State
- C - County
- M - Municipal

Total number of handlers is 933

REFERENCE 18

LIZ
 Our new
 RCRA database
 Mike

V #11

RCRA Notifiers List

Region IX Hawaii Database

Run 13.09.20 02.07.94

Facility/ID Leg. Dist	Contact - Name	- Phone	Notif.Date	Facil. Type	ITSD	GEN	TRANS	SPCL	REC'D
FIRESTONE HOLIDAY MART HID981577265	Facil.: 801 KAHEKA ST Mail: 801 KAHEKA ST	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)946-5291 HI HI	09/15/86 96814 96814	-	-N-	-	-	-
FIRST DEVELOPMENT INC HID984466060	Facil.: 1777 KAPIOLANI BLVD Mail: 745 FORT ST HAWAII TWR	HITOSHI UCHINO HONOLULU HONOLULU	(808)545-1953 HI HI	08/13/92 96814 96813	-	CEG	-	-	-
FKS RENTALS & SALES HID981639974	Facil.: 653 KAKOI ST Mail: 653 KAKOI ST	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)836-2961 HI HI	02/23/87 96819 96819	-	SGG	-	-	-
FLICK PEST CONTROL HID982323792	Facil.: 2629 WAI WAI LOOP Mail: 2629 WAI WAI LOOP	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)836-1173 HI HI	02/12/88 96819 96819	-	LOG	-	-	-
FLINT INK CORP HID044845493	CAL INK DIV Facil.: 223 COOKE ST Mail: 223 COOKE ST	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)538-6718 HI HI	08/18/80 96813 96813	-	CEG	-	-	-
FLYNN LEARNER HID984468363	Facil.: 120 SAND ISLAND ACCESS RD Mail: 91 056 HANUA ST	JAMES BANIGAN HONOLULU EWA BEACH	(808)682-5810 HI HI	06/10/92 96819 96707	-	SGG	-	-	-
FONG CONSTRUCTION CO LTD HID984470021	Facil.: 237 DAIRY RD Mail: 237 DAIRY RD	RODERICK FONG KAHULUI KAHULUI	(808)877-6501 HI HI	07/07/93 967322963 967322963	-	SGG	-	-	-
FOSTER EQUIPMENT CO LTD HID984466532	Facil.: 719 AHUA ST Mail: PO BOX 30188	ROSALINE HORIUCHI HONOLULU HONOLULU	(808)832-7731 HI HI	05/17/91 96819 96820	-	SGG	-	-	-
FRANK'S KALIHI CHEVRON HID981655285	Facil.: 2160 N KING ST Mail: 2160 N KING ST	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)847-0388 HI HI	09/10/86 96819 96819	-	SGG	-	-	-
FRED L WALDRON LTD HIT982012387	Facil.: 91-254 OLAI ST Mail: 91-254 OLAI ST	ENVIRONMENTAL MANAGER EWA BEACH EWA BEACH	(808)682-2022 HI HI	07/13/87 96707 96707	-	SGG	-	-	-
FULLER O BRIEN PAINTS HI0000005710	Facil.: 240 PUUHALE RD UNIT A Mail: 240 PUUHALE RD UNIT A	KERRY KIYABU HONOLULU HONOLULU	(808)848-8001 HI HI	09/27/93 96819 96819	-	CEG	-	-	-
FULLER OBRIEN PAINTS HID984469957	Facil.: 746 AUAHI ST Mail: 746 AUAHI ST	KERRY KIYABU HONOLULU HONOLULU	(808)537-6902 HI HI	06/01/93 96813 96813	-	CEG	-	-	-
FUMISEAL INC HID033183963	Facil.: 1301 MOONUI ST Mail: 1301 MOONUI ST	ENVIRONMENTAL MANAGER HONOLULU HONOLULU	(808)847-2611 HI HI	03/06/81 96817 96817	-	-N-	TRANS	-	-